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1860

THIRD ANNUAL REPORT  
OF THE  
BOARD OF COMMISSIONERS  
1860  
CENTRAL PARK

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BRIDGE FOR CARRIAGE DRIVE .  
OVER ARM OF LAKE WEST OF RAMBLE .

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THIRD ANNUAL REPORT  
OF THE  
BOARD OF COMMISSIONERS  
OF THE  
CENTRAL PARK.

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JANUARY, 1860.



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## Board of Commissioners of the Central Park.

---

CHARLES H. RUSSELL,

J. F. BUTTERWORTH,

JOHN A. C. GRAY,

WALDO HUTCHINS,

THOMAS C. FIELDS,

ANDREW H. GREEN,

CHARLES W. ELLIOTT,

WILLIAM K. STRONG,

AUGUST BELMONT,

HENRY G. STEBBINS,

R. M. BLATCHFORD.

*President.*

R. M. BLATCHFORD.

*Treasurer and Comptroller.*

ANDREW H. GREEN.

*Vice-President.*

JOHN A. C. GRAY.

*Secretary.*

THOMAS C. FIELDS.





## REPORT.

---

*To the Honorable the Common Council  
of the City of New York:*

The sixth section of the act constituting the Board of Commissioners of the Central Park, requires that "the said Board shall annually, and in the month of January in each year, make to the Common Council of the said city a full report of their proceedings, and a detailed statement of all their receipts and expenditures."

In pursuance thereof, the Board presents its Third Annual Report.

The attention of the Board has, since the last report, been especially directed to the advancement of that portion of the Park situated nearest the densely populated part of the city.

With the completion of the part below Seventy-ninth street, one of the most important objects of its exertions—that of furnishing an abundant space, interspersed with numerous objects of interest, for immediate use and enjoyment—has been attained.

The greater portion of visitors at the Park are pedestrians, and for a considerable period of time most of these will find ample space and variety in the walks of

the south part of the Park; comparatively few will desire to extend their walks above the reservoir.

The general and immediate demand for a place in which to ride and drive being thus accommodated, the Board will, hereafter, proceed to the transformation of the more extended area beyond, which incloses works not under its jurisdiction, and for this reason cannot be forwarded with the same rapidity that has characterized the progress of the work up to this time.

The completion of the details of the lower park, and the construction of carriage-roads and a foot-walk in the upper park, will be the work of the current year.

The principal features of the work that have been accomplished to this time, are the following :

1st. The roads completed are as follows :

|                                |                 |
|--------------------------------|-----------------|
| Road, 60 feet wide . . . . .   | 4,968 feet.     |
| “ 50 to 55 feet wide . . . . . | 1,315 “         |
| “ 45 “ . . . . .               | 9,443 “         |
| “ 32 “ . . . . .               | 450 “           |
| “ 25 “ . . . . .               | 895 “           |
| <hr/>                          |                 |
| Total, . . . . .               | <u>17,071 “</u> |

|   |             |
|---|-------------|
| Total Macadamized road finished . . . . .           | 7,233 feet. |
| “ Telford “ . . . . .                               | 9,838 “     |
| “ Gravel “ . . . . .                                | 200 “       |
| Total, 3 miles, 1,431 feet ( $3\frac{1}{2}$ miles). |             |

2d. Roads commenced, graded, and in progress of grading:

|                           |           |                    |
|---------------------------|-----------|--------------------|
| Road, 60 feet wide . . .  | 530 feet. |                    |
| " 50 to 55 . . .          | 165 "     |                    |
| " 45 feet wide . . .      | 9,880 "   |                    |
| " 40 " . . .              | 6,156 "   | (2 transv. roads.) |
| " 32 " . . .              | 525 "     |                    |
| " 30 " . . .              | 575 "     |                    |
| Bridle road, 25 feet wide | 8,600 "   |                    |
| Road, 20 " "              | 320 "     |                    |

---

Total road graded, and in progress of grading . 26,751 " or 5 miles 351 feet.

3d. The total length of foot-path, of divers width, completed, is 7 miles.

The total length of the walk of the mall completed, is 1,450 feet.

Total walks completed, 7 miles 1,450 feet.

The bridges complete, or in progress, are:

1st. Ornamental bridges, complete, or nearly complete.

Bridge No. 2, complete.

" 3, nearly complete.

" 4, complete.

" 5, nearly complete, (iron bridge over pond.)

" 6, nearly complete.

" 7, "

" 15, " (rustic bridge near cave.)

Total—Seven ornamental bridges, complete, or nearly complete.

Ornamental bridges in progress are :

Bridge No. 1, (terrace.)

“ 8,

“ 10, (over pond, near bridge No. 4.)

“ 11,

“ 12,

Total—Five ornamental bridges in progress.

2d. Transverse road bridges, complete, or nearly complete :

Bridge, No. 1, transverse road No. I.

“ 2, “ “

“ 4, “ “

In progress “ 3, “ “

“ 5, “ No. II.

“ 7, “ “

The number of trees and shrubs planted is as follows :

Evergreen trees, . . . . . 1,573

“ shrubs, . . . . . 1,864

Deciduous trees, . . . . . 1,259

“ shrubs, . . . . . 9,137

Creepers, . . . . . 3,157

Herbaceous plants, . . . . . 375

---

Total, . . . . . 17,365

With but very rare and inconsiderable exceptions, so far as opportunity of testing them has been had, these trees and shrubs appear exceedingly thrifty, and promise well.

On the promenade, where the principal plantation of large trees has been made, numbering about 150, a large percentage have failed. They were set by contract, guaranteed by the contractor, and have been mainly replaced at his expense. With this exception, the Board have reason to be satisfied with the progress made on this most important part of the improvements of the ground.

The following is a summary of the agricultural drainage for 1859 :

1,290 feet of brick sewer, 18 inches in diameter, through the east meadow.

2,343 feet of vitrified pipe have been laid below Eighty-sixth street.

2,086 feet of the same sort of pipe above Ninety-third street.

31,508 feet of common red tile, below Eighty-sixth street.

14,435 feet of common red tile, above Ninety-third street.

2,454 feet of stone and tile drain, below Seventy-ninth street.

322 feet of stone and tile drain, above Ninety-third street.



Total amount of drainage laid during 1859 :

Below Eighty-sixth street, . . .  $7\frac{970}{1000}$  miles.  
 Above Ninety-third street, . . .  $3\frac{431}{1000}$  “

On the 2d of June, a portion of the grounds situated south of the reservoir, known as the Ramble, was so far completed as to warrant a notice to the public of its being in a condition for use.

The rare taste and excellent judgment of the Architect-in-Chief of the Park have been displayed in the planting and arrangement of this ground, and have been met with a singular unanimity of approval by those skilled in landscape gardening, and the public.

In November, about three miles of the drive were opened. So far as use has afforded a test of their thoroughness of construction, the results have been entirely satisfactory.

The south transverse road is so far complete as to admit of use in crossing the Park.

The changes that have taken place in the members of the Board during the last year are, the election of Henry G. Stebbins, Esq., and R. M. Blatchford, Esq., respectively, in places of Robert J. Dillon and James Hogg, resigned.

The Board numbers eleven persons, and is now full.

The action of the Legislature during the winter of 1858-59, besides making some changes in the original law constituting the Commission, has imposed upon it new duties.

Though more than six months have elapsed since they

were initiated, the proceedings required by the Legislature, to bring within the Park the land lying between One Hundred and Sixth and One Hundred and Tenth streets and the Fifth and Eighth avenues, are not yet consummated.

The delay in these proceedings will retard the completion of the drive at the north end of the Park. Neither the plan of this proposed addition, nor that of the adjacent portion of the existing Park, can be determined until the proceedings are brought to a conclusion. The Commissioners appointed by the Supreme Court for this duty are Anthony J. Bleecker, Richard Kelly, and Hawley D. Clapp; their appointment was made on the 13th of July last.

No progress has yet been made in the widening of Seventh avenue, from the Park to the Harlem river, as authorized by the Legislature.

It is provided, by the law of the last winter, that bequests may be made to the city of New York for the improvement and ornamentation of the Central Park, or for the establishment or maintenance of museums, zoological gardens, &c., &c., upon such trusts and conditions as may be prescribed by the donors, and agreed to by the Mayor, Aldermen, and Commonalty of the city of New York, and that such property shall be under the management, direction, and control of the Board of Commissioners of the Central Park.

The Commission have already granted permission to place within the Park a monumental statue, in marble

or bronze, of the late Commodore Matthew C. Perry—the gift of one of its members, August Belmont, Esq. To its intimate commercial relations with all parts of the Union, the city owes its unprecedented advance, wealth, and population. It is fit that the virtues of heroes and statesmen, whose fame is the common heritage of the country, should, in this crowning work of its metropolis, find appropriate commemoration.

It is interesting to observe the eagerness that exists in the public mind for the establishment, within the Central Park, of institutions that will afford the means of popular cultivation and innocent recreation.

Observatories, museums of natural history, zoological and botanical gardens, and galleries of art, find offers of substantial aid for their foundation.

The Board doubt the propriety of appropriating the moneys placed at its disposal, for these or any kindred purposes. Its duty is confined to the construction, maintenance, and regulation of the Park; and, while institutions of this nature are desirable, and would be fitly placed on the Park, the Board deem it proper that the means for their establishment, maintenance, and arrangement should be derived from other sources.

The Board would probably be authorized to provide a suitable structure, within which donations of works of art might be deposited and protected, but it would not long be tolerated that the Board should expend the public moneys in the purchase of such works.

Whatever may be the authority of the Board to appro-

priate any of the domain of the Park for establishments such as those to which reference has been made, though they would, doubtless, command very general approval, yet the authority should be exercised only after the most mature consideration.

To insure the proper management of such institutions, it would be better to leave them to the care of private hands, or of associations, under such judicious general regulations as might be prescribed by the Board, having reference to the convenience and comfort of visitors, and to the integrity and faithfulness of their management.

It would be entirely inadmissible, that any of these institutions should find a place within any part of this domain, without first furnishing satisfactory evidence of the possession of pecuniary means, adapted to their permanent establishment on no inferior or uncertain basis.

The part of the Park adjoining the proposed new reservoir, will be, for a considerable period of time, so much incumbered with waste material as to render its early completion impracticable.

The supply of water for lakes, fountains, and irrigation, will be inadequate until the new reservoir is brought into use, and additional facilities furnished for bringing to it the full volume of the aqueduct. Much inconvenience has been experienced during the last season, in obtaining the very small quantities of water necessary for use in works of construction, and for flushing the ice—the Croton Aqueduct Board not deeming it wise to use the limited quantity of water in such a way



as to shorten the supply for family and fire consumption in the city.

The necessity of obtaining water from the reservoir was, to some extent, overruled by the heavy rains in December. The Skating Lake was gradually filled, and, whenever the ice was in a condition for use, has been in the daytime and evening a constant resort, presenting a scene of gaiety, and fully demonstrating the fact, that the winter attractions of the Park have not been overestimated.

The system of irrigation of the Park has been prosecuted during the past four months with vigor. Much of the pipe is already prepared for use, and it will be a very material saving if these pipes can be filled, and used during the ensuing season.

The Board made a communication to the Common Council, in January last, respecting the sewerage of the Park, requesting the "immediate construction of an adequate sewer, from the one now built in Fifty-sixth street, at the west side of Third avenue, through Fifty-sixth street to Lexington avenue; and through Lexington avenue, from Fifty-sixth street to Fifty-eighth street; and through Fifty-eighth street, from Lexington avenue to Fifth avenue; and through Fifth avenue, from Fifty-eighth street to Fifty-ninth street."

The Board again respectfully urge action of the Common Council on this subject, as the process of building on either side of the Park will soon commence, and the present meagre outlet of water will be so obstructed as



to overflow a large extent of land upon the Park, and in its vicinity.

The filling of forty feet in width of the south end of the Park along the north line of Fifty-ninth street, was entered upon by the contractor nearly one year since, and the work was to be completed on the 21st day of August, 1859.

This being still incomplete, the Board have been unable to present the finished appearance in this part of the Park that they had hoped.

The completion of the regulation, sewerage, curbing, guttering, and paving of Fifty-ninth street, are immediate necessities for the convenience of the great numbers that use this access to the Park.

In the early part of the present year, it became apparent that the introduction of various improvements were necessary to meet the public demand; and the extension of the Park on the north would require an additional expenditure.

It also seemed to the Board clear, that the construction of the Park would be much more economically and much more speedily accomplished by carrying on all classes of structure at the same time, and that it was the duty of the Board to construct the work placed in its charge in such a manner as to combine beauty of design, with solidity and permanency of structure.

In furtherance of these views, and, as it is believed, in obedience to the dictates of a sound economy, a request was made of your Honorable Body for its sanction of an

application to the Legislature, for further provision of means to complete the Park. This request was met on the part of both Boards of the Common Council with an unanimity of approval that was peculiarly grateful to those charged with the labor and responsibility of the conduct of the Park; and the Board take pleasure in acknowledging the cordial co-operation and encouragement it has received in the carrying on its work at the hands of your Honorable Body, from the commencement of the work to this time.

The policy of opening for public use portions of the Park as they are completed, has thrown upon the Board the necessity of providing out of the moneys placed at its disposal, the means of maintaining and keeping in order these completed portions.

The current expenses of maintaining and keeping the Park in order, should be provided from a fund other than that provided for construction.

The Board has had under consideration the subject of the expense of maintaining the Park, and will endeavor to establish a system of licenses for franchises and privileges, that will yield a revenue to the Park without in any respect obstructing or taxing its free enjoyment in all departments. Licenses for refreshment rooms; for light and proper public vehicles to run on the Park; for perambulators, or Bath-chairs for invalids, to be allowed on the walks, and for boats on the lake, may all be made to yield a revenue, and relieve the city of a part of the annual cost of maintaining the Park.

These conveniences are all to be conducted under stringent rules to be provided by the Board.

While the maintenance of a Zoological Garden upon the Park out of the public funds would not be justifiable, yet such an institution would be an object of continued interest and instruction to the whole community. The maintenance of such a garden by a private association would insure more thorough management, and would, at very moderate charges of admission, yield a large revenue. Such an association could well afford to pay a rent for a location on the Park, which rent, together with all other privileges of this nature, should yield a revenue to be applied to the reduction of the annual expenses of maintaining the Park.

The Board has under appointment forty-four keepers of the Park. Under the most thorough drill and training, a force has been established, sufficient in number for the present needs of the Park, and of a character for intelligence, courtesy, and efficiency, that have commended them to the public approbation. The training of keepers of the Park is essentially different from that of the general police force of the city, and the Board, for this reason, has deemed it better that this full force should be of its own appointment, and subject to its control.

The following are the existing ordinances of the Park:

*“Be it ordained, by the Commissioners of the Central Park:*

"All persons are forbidden—

"To enter or leave the Park, except by the gate-ways;

"To climb, or walk upon the wall;

"To turn cattle, horses, goats, or swine, into the Park;

"To carry fire-arms, or to throw stones or other missiles within it;

"To cut, break, or in any way injure or deface the trees, shrubs, plants, turf, or any of the buildings, fences, bridges, or other constructions upon the Park, or to converse with, or in any way hinder, those engaged in its construction;

"No animal shall travel on any part of the Central Park, except upon the 'ride' or 'equestrian road,' at a rate exceeding seven miles an hour. Persons on horse-back shall not travel on the 'ride' or 'equestrian road,' at a rate exceeding ten miles per hour.

"No vehicle shall be permitted on the 'ride' or 'equestrian road,' the same being devoted exclusively to equestrians; nor shall any vehicle, horse, or animal of burden, go upon any part of the Central Park, except upon the 'drive,' and other carriage and transverse roads, and upon such places as are appropriated for carriages at rest.

"No animal or vehicle shall be permitted to stand upon the 'drive' or carriage-roads of the Central Park, or any part thereof, to the obstruction of the way, or to the inconvenience of travel, nor shall any person upon the Central Park solicit or invite passengers.

"No hackney coach, carriage, or other vehicles for



hire, shall stand upon any part of the Central Park for the purpose of taking in any other passengers or persons than those carried to the Park by said coach, carriage, or vehicle.

“No person shall expose any article or thing for sale upon the Central Park, except previously licensed by the Board of Commissioners of the Central Park; nor shall any hawking or peddling be allowed on the Central Park.

“No omnibus, or express wagon, with or without passengers; nor any cart, dray, wagon, truck, or other vehicle carrying goods, merchandise, manure, soil, or other article, or solely used for the carriage of goods, merchandise, manure, or other articles, shall be allowed to enter any part of the Central Park, except upon the transverse roads.

“No threatening, abusive, insulting, or indecent language, shall be allowed on the Central Park, whereby a breach of the peace may be occasioned.

“No person shall be allowed to tell fortunes, or play at any game of chance, at or with any table or instrument of gaming, nor to do any obscene or indecent act whatever on the Central Park.

“In case of an emergency, where life or property is endangered, all persons, if required so to do by the Superintendent, or any of his assistants, shall remove from the portion of the Central Park specified by the Superintendent or his assistants, and remain off the same till permission is given to return.”

A few details of the area, of the expense of maintain-



ing other parks of the city, and of the relative position of the Central Park, will furnish information much desired.

The following table of the estimated value in the year 1856, of the parks of the city, obviously does not exhibit their present value :

|   |                               |
|---|-------------------------------|
| Bowling Green, . . . . .  | \$135,000 00                  |
| Battery, . . . . .  | 3,000,000 00                  |
| Castle Garden (date of valuation unknown), . . . . .  | 100,000 00                    |
| Central Park, Fifty-ninth and One Hundred and Sixth streets,<br>Fifth and Eighth avenues, . . . . . | 5,169,369 90                  |
| Park—City Hall, . . . . .   | 3,000,000 00                  |
| Do. buildings in (date of valuation unknown), . . . . .   | 600,000 00                    |
| Duane Park, . . . . .   | 15,000 00                     |
| Park (Five Points), . . . . .   | 15,000 00                     |
| Washington Square, . . . . .  | 816,000 00                    |
| Abington Square, . . . . .  | 12,000 00                     |
| Triangular park, Fourth, Christopher, and Grove streets, . . . . .                                  | 15,000 00                     |
| Union Park, . . . . .   | 504,000 00                    |
| Tompkins Square, . . . . .  | 337,000 00                    |
| Stuyvesant Square, Fifteenth and Seventeenth streets, . . . . .                                     | 196,000 00                    |
| Stuyvesant Square, Third and Fourth avenues, Sixth and<br>Seventh streets, . . . . .                | 15,000 00                     |
| Madison do., . . . . .  | 520,000 00                    |
| Triangular Park, Fifth avenue, Broadway, and Twenty-fifth<br>street, . . . . .                      | 10,000 00                     |
| Reservoir Square (date of valuation unknown), . . . . .   | 150,000 00                    |
| Manhattan Square, . . . . .   | 88,000 00                     |
| Hamilton Square, Yorkville, . . . . .   | 97,000 00                     |
| Mount Morris Square, . . . . .  | 40,000 00                     |
| Total . . . . .   | <u><u>\$14,834,369 90</u></u> |

The following table shows the area of the different parks of the city:

|                                | Acres. | Roods. | Perches. | Feet. |
|--------------------------------|--------|--------|----------|-------|
| Battery, . . . . .             | 10     | 2      | 22       | 239   |
| Bowling Green, . . . . .       | ..     | 2      | 9        | 253   |
| Park, City Hall, . . . . .     | 10     | 3      | 14       | ..    |
| Duane Park, . . . . .          | ..     | ..     | 21       | 66    |
| Five Points Park, . . . . .    | ..     | ..     | 24       | 193   |
| Hudson Square, . . . . .       | 4      | ..     | 13       | 183   |
| Do., . . . . .                 |        |        | 11       | 85    |
| Washington Square, . . . . .   | 9      | 2      | 39       | 246   |
| Tompkins Square, . . . . .     | 10     | 2      | 1        | 112   |
| Abingdon Square, . . . . .     | ..     | ..     | 33       | 36    |
| Union Place, . . . . .         | 3      | 1      | 34       | 253   |
| Stuyvesant Square, . . . . .   | 3      | 3      | 28       | 217   |
| Gramercy Park, . . . . .       | 1      | 2      | 30       | 92    |
| Madison Square, . . . . .      | 6      | 3      | 19       | 47    |
| Bloomingdale Square, . . . . . | 18     | ..     | 9        | 136   |
| Hamilton do., . . . . .        | 15     | ..     | ..       | ..    |
| Observatory Place, . . . . .   | 25     | 3      | 2        | 160   |
| Manhattan Square, . . . . .    | 19     | ..     | 8        | 182   |
| Mount Morris do., . . . . .    | 20     | ..     | 27       | 114   |
| Total areas, . . . . .         | 170    | 0      | 37       | 110   |

The report of the Comptroller of 1857 shows the expenditure for lands and places for that year at \$23,502 70. This expenditure is mainly confined to Madison, Union, Battery, Duane Street, Washington, Stuyvesant, Tompkins, and City Hall Parks, comprising an area of about fifty-five acres, and does not include any expense of police, gate-keepers, irrigation, and very little, if any, for trees and planting.

The size of the most celebrated European parks is given in the subjoined table:

|   | Acres. |
|---|--------|
| London—All parks in and near London, including gardens, squares, and<br>parade-grounds, . . . . . | 6,000  |
| Do. Hyde Park, . . . . .  | 380    |
| Do. Kensington do. . . . .  | 227    |
| Do. Green do. . . . .   | 56     |
| Do. St. James' do. . . . .  | 87     |
| Do. Regent's do. . . . .  | 372    |
| Windsor—Great Park, . . . . .   | 3,500  |
| Do. Little do. . . . .  | 300    |
| Richmond do. . . . .  | 2,250  |
| Dublin—Phoenix do. about . . . . .  | 2,000  |
| Gardens at Versailles, about . . . . .  | 3,000  |
| Paris—Bois de Boulogne, . . . . .   | 2,158  |
| Berlin—Thiergarten, about . . . . .   | 200    |
| Munich—Englischer garten, about . . . . .   | 500    |
| Vienna—Prater, . . . . .  | 1,500  |
| Magdeburg—Park and Garden, . . . . .  | 120    |
| Birkenhead Park, near Liverpool, . . . . .  | 180    |

The Comptroller of the city, in his report of 1859, observes, "The increase in the amount of taxes accruing to the city, in consequence of the enhancement in value of real estate situated in the upper part of the island, over and above the former value of the land now withdrawn from taxation, on account of the opening of this noble park, will, it is thought, afford more than sufficient means for the payment of interest on the debt incurred for its purchase and improvement, without any increase in the general rate of taxation."

The value of real estate, as assessed in the wards con-

tiguous to the Central Park, for the years 1855-6-7-8 and 9, are as follows:

|             | 1855.               | 1856.               | 1857.               | 1858.               | 1859.               |
|-------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 12th Ward.. | \$8,462,635         | \$8,149,360         | \$8,134,013         | \$8,476,790         | \$10,062,725        |
| 19th " ..   | 9,382,886           | 8,041,183           | 8,558,624           | 10,971,775          | 12,621,894          |
| 22d " ..    | 10,593,139          | 10,239,022          | 10,489,454          | 11,553,506          | 13,261,025          |
| Total...    | <u>\$28,438,660</u> | <u>\$26,429,565</u> | <u>\$27,182,091</u> | <u>\$31,002,051</u> | <u>\$35,945,644</u> |

Increased valuation on the three wards, 1856 to 1859, inclusive, \$35,945,644  
26,429,565

Total, . . . . . \$9,516,079

The total cost of land taken for the Park to January 1st, 1860, \$5,406,193 74

Of this amount, there was assessed upon contiguous lands, . 1,661,395 00

Total cost of lands of the Park, . . . . . \$3,744,798 74

To this is to be added the cost of the proposed addition to the Park of the lands between One Hundred and Sixth and One Hundred and Tenth streets.

The last taxes collected on the lands comprised within the Central Park, were for the year 1856.

The number of city lots (equivalent to 25 by 100 feet, or 2,500 superficial feet each) occupied by the Park from Fifty-ninth to One Hundred and Tenth streets, after reserving out the areas occupied by the two reservoirs, and streets and avenues, and the lots or portions of lots occupied by the four transverse roads, is, . . . . . 8,607  
The space occupied by two reservoirs, including streets and avenues, 2,474  
The space occupied by reservoirs, excluding streets and avenues, . 1,716

Central Park, as laid out in 1853, including the reservoir, contained  $773\frac{45}{100}$  acres, and with the addition to One Hundred and Tenth street, authorized by act of 1859, will contain  $838\frac{85}{100}$  acres, exclusive of streets and avenues.

It is situated almost in the middle of the island, and occupies one-fourth of its width, and two and a half miles of its length. It is estimated that there are as many buildings north of its southern limits as would compactly fill the vacant lots south of it; and if only as many additional buildings should be erected in the next twenty years as have been in the last, almost the whole available space south of One Hundred and Tenth street must be occupied, and the neighborhood of the Park be in the full enjoyment of its advantages.

Distances from Central Park to various points, taken from Randall's Atlas, in office of Street Commissioner :

|   |                   |        |
|---|-------------------|--------|
| From Central Park, at corner of Fifty-ninth street and Broadway, to the Battery, by Broadway, . . . . .   | $4\frac{7}{100}$  | miles. |
| From Central Park, at same point to Kingsbridge, by Bloomingdale Road, . . . . .  | $9\frac{1}{100}$  | "      |
| From Central Park, at Eighty-sixth street and Eighth Avenue, to Bloomingdale Road, and thence to Kingsbridge, . . . .   | $8\frac{1}{100}$  | "      |
| From Central Park, at One hundred and seventh street and Eighth Avenue, to Bloomingdale road, and thence to Kingsbridge, . . . . .                                | $7\frac{1}{100}$  | "      |
| From Central Park, at One hundred and tenth street and Seventh avenue, by One hundred and tenth street to Bloomingdale road, and thence to Kingsbridge, . . . . . | $7\frac{2}{100}$  | "      |
| From Central Park, at same point, by Seventh avenue to Harlem river, Macomb's dam, . . . . .  | $2\frac{2}{100}$  | "      |
| The area of the south playground is, . . . . .  | 10                | acres. |
| " open ground west of promenade is, . . . . .   | 15                | "      |
| " principal lake at summer level, seven feet of water, is   | $20\frac{1}{100}$ | "      |
| " principal lake at winter level, four feet of water, is  | $17\frac{3}{4}$   | "      |

This area includes the smaller lake near Eighth avenue.



The organization of the large forces engaged in the great variety of concurrent and interlacing operations of construction, in such manner that each class may be effectively occupied, and a faithful return of the time of every individual secured, has required very perfect arrangements, and such as would readily adjust themselves to the constantly occurring changes in the work.

This organization intimately affects the outgo of the money, and upon its fidelity, and upon the vigor that pervades it, depend the results that are obtained from the means expended. The construction of the Park, in all departments, has been characterized by thorough system, and efficiency, and economy, and has not only been satisfactory to the Board, but, it is believed, has commanded the warm approval of experienced constructors and of the public.

As nearly as can now be ascertained, 10,500 persons have had employment on the Park at different times, since its commencement.

4,435 were employed during last year.

The average per day for the past year is 3,027.

The largest number at one time was 3,666.

The average number of general foremen, foremen, and assistant foremen, during the year, is 146.

284 men have been discharged for inefficiency.

286 for violation or neglect of rules.

477 have been temporarily suspended from work for neglect of rules, &c.

One fatal accident occurred during the year, and one the year previous, both the results of imprudence of per-



sons killed. These are believed to be the only fatal accidents that have occurred in the construction of the Park.

The force is paid in specie, regularly every fortnight, commencing on Thursday.

At its organization, the Board perceived the propriety of excluding all political influences from the Park, and of the selection of its employees without respect to party considerations. This policy, inaugurated and steadily pursued, has produced practical results satisfactory to the whole community. To its past policy on this subject the Board will rigidly adhere for the future.

The accounts of the Treasurer of the Board are herewith submitted, showing, in detail, the receipts and expenditures of the Board for the past year.

The following is a brief summary of these accounts :

|   |                |
|---|----------------|
| Balance on hand, December 31, 1858, . . . . .                               | \$23,342 97    |
| The total receipts of the year ending December 31st, 1859, are as follows : |                |
| From issues of stock by the city of New York, \$1,066,600 00                |                |
| From sale of barrels, . . . . .   | 13 20          |
| From pound receipts, . . . . .  | 186 92         |
| Advanced by the Bank of Commerce, . . . . .                                 | 100,000 00     |
|   | <hr/>          |
|   | 1,166,800 12   |
|   | <hr/>          |
|   | \$1,190,143 09 |

The total expenditures for the year ending December 31st, 1859, are as follows :

|   |              |
|---|--------------|
| Salaries of officers, clerks, and incidental expenses . . . . . | \$68,845 71  |
| Park-keepers, . . . . .   | 24,404 55    |
| Materials of construction and tools, . . . . .                  | 194,040 01   |
|   | <hr/>        |
| Carried forward, . . . . .                                      | \$287,290 27 |

|   |              |                     |
|---|--------------|---------------------|
| Brought forward, . . . . .  | \$287,290 27 | \$1,190,143 09      |
| Stationery, printing and advertising, engineers' drawing materials, and books of account, . . . . . | 5,743 95     |                     |
| Exhibition of plans, . . . . .  | 31 59        |                     |
| Pound, . . . . .  | 22 00        |                     |
| Trees and plants, manure and cartage of the same, . . . . .   | 19,510 79    |                     |
| Broad walk, north side of 59th street, . . . . .  | 10,597 80    |                     |
| Labor account, amount paid to laborers, cartmen, &c., as per pay-rolls and vouchers, . . . . .      | 856,050 07   |                     |
|   |              | <u>1,179,246 47</u> |
| Balance, . . . . .  |              | <u>\$10,896 62</u>  |

The total receipts of the Board, from the commencement of its organization, May 1st, 1857, are as follows:

|   |                     |
|---|---------------------|
| From issues of stock, by the city of New York, \$1,666,600 00   |                     |
| From sale of buildings on the Park, . . . . .   | 4,971 37            |
| From laborers, for lost tools, . . . . .  | 260 88              |
| From Wm. Menck, for rent, . . . . .   | 50 00               |
| From sale of grass on the park, . . . . .   | 115 00              |
| From exhibition of plans, . . . . .   | 294 85              |
| From John McGrath, for lost time, . . . . .   | 5 75                |
| From this amount over in making change, . . . . .   | 02                  |
| From sale of barrels, . . . . .   | 13 20               |
| From Bank of Commerce, interests on deposits, . . . . .   | 2,909 97            |
| From pound receipts, . . . . .  | 291 32              |
| Advanced by the Bank of Commerce, . . . . .   | <u>100,000 00</u>   |
| Total receipts from May 1, 1857, to January 1, 1860, . . . . .  | \$1,775,512 36      |
| The expenditures from May 1, 1857, the date of the organization of the Board, to January 1, 1858, were, . . . . . | \$77,881 41         |
| Expenditures from January 1, 1858, to January 1, 1859, . . . . .  | 507,487 86          |
| Expenditures from January 1, 1859, to January 1, 1860, . . . . .  | <u>1,179,246 47</u> |
|   | \$1,764,615 74      |

|   |                |
|---|----------------|
| Total receipts from May 1, 1857, to January 1, 1860, . . .    | \$1,775,512 36 |
| Total expenditures from May 1, 1857, to January 1, 1860, . .  | 1,764,615 74   |
|   | <hr/>          |
| Balance in Bank of Commerce, January 1, 1860, . . .           | \$10,896 62    |
| The balance due on outstanding contracts, January 1, 1860, is |                |
| about . . . . .   | \$170,000 00   |
|   | <hr/> <hr/>    |

Respectfully submitted.

ANDW. H. GREEN,

*Comptroller of the Park.*

R. M. BLATCHFORD,

*President of the Board of  
Commissioners of the Central Park.*



BRIDGE FOR FOOTPATH





## SUMMARY OF THE TREASURER'S ACCOUNT.

|  |                |
|--|----------------|
| Balance in hand, December 31st, 1858,                                      | \$23,342 97    |
| The total receipts of the year ending December 31st, 1859, are as follows: |                |
| From fourth issue of Stock by the city of N. Y.                            | \$300,000 00   |
| Fifth do do do   | 300,000 00     |
| Sixth do do do   | 466,600 00     |
| Sale of barrels,   | 13 20          |
| Pound receipts,  | 186 92         |
| Advanced by Bank of Commerce,  | 100,000 00     |
|  | <hr/>          |
|  | 1,166,800 12   |
|  | <hr/>          |
|  | \$1,190,143 09 |

The total expenditures for the year ending December 31st, 1859, are as follows:

|   |              |
|---|--------------|
| Salaries of officers and clerks, and incidental expenses,                                 | \$68,845 71  |
| Park-keepers,   | 24,404 55    |
| Materials of construction and tools   | 194,040 01   |
| Stationery, printing and advertising, engineers' drawing materials, and books of account, | 5,743 95     |
| Exhibition of plans,  | 31 59        |
| Pound,  | 22 00        |
| Trees and plants, manure and cartage of the same,   | 19,510 79    |
| Broad walk, north side of 59th street,  | 10,597 80    |
| Labor account, amount paid laborers, cartmen, &c., as per pay-rolls and vouchers,         | 856,050 07   |
|   | <hr/>        |
|   | 1,179,246 47 |
|   | <hr/>        |
| Balance,  | \$10,896 62  |

Total receipts of the Board, from the commencement of its organization, May 1st, 1859, are as follows:

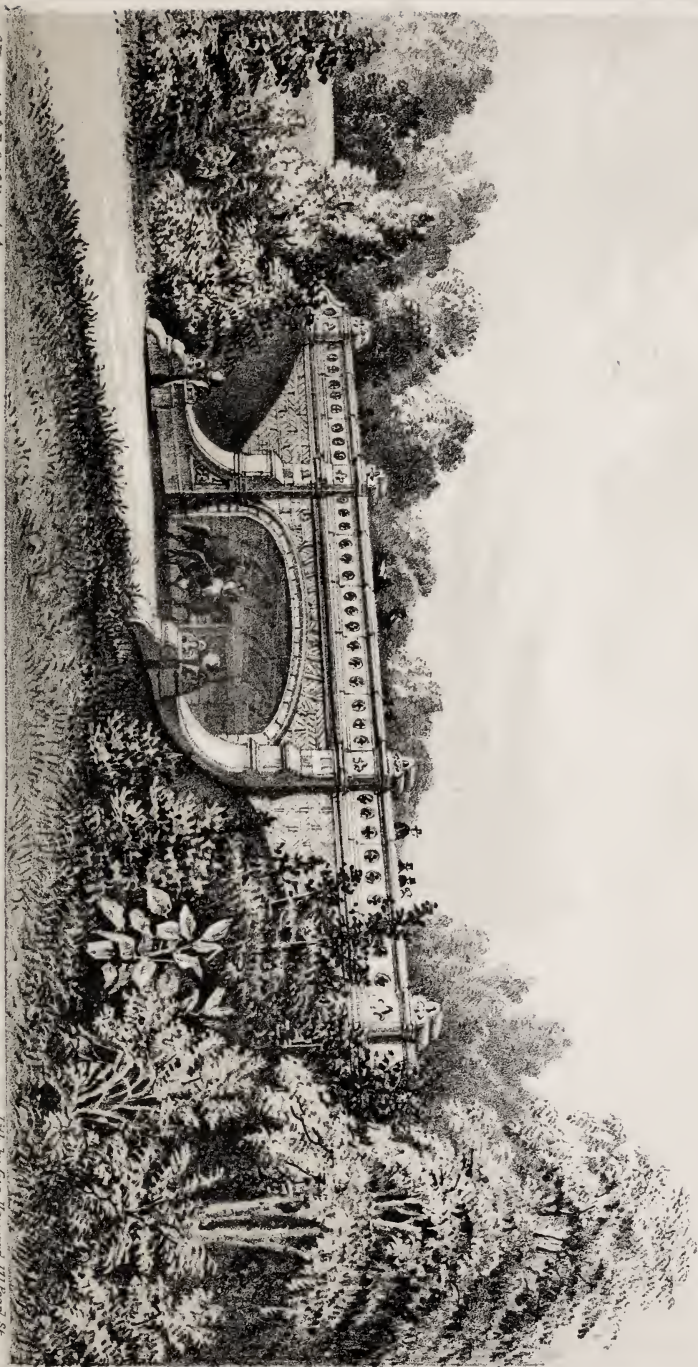


|  |                |
|--|----------------|
| From first issue of Stock by the city of N. Y. | \$50,000 00    |
| Second do do do                                | 250,000 00     |
| Third do do do                                 | 300,000 00     |
| Fourth do do do                                | 300,000 00     |
| Fifth do do do                                 | 300,000 00     |
| Sixth do do do                                 | 466,600 00     |
| Sale of buildings on the Park, . . .           | 4,971 37       |
| Laborers, for lost tools, . . .                | 260 88         |
| Wm. Menck, for rent, . . .                     | 50 00          |
| Sale of grass on the Park, . . .               | 115 00         |
| Exhibition of plans, . . .                     | 294 85         |
| John McGrath, for lost time, . . .             | 5 75           |
| This amount over in making change, .           | 02             |
| Sale of barrels, . . .                         | 13 20          |
| Bank of Commerce, interest on deposits,        | 2,909 97       |
| Pound receipts, . . .                          | 291 32         |
| Advanced by Bank of Commerce, .                | 100,000 00     |
| <hr/>  |                |
| Total receipts, from May 1st, 1857,            |                |
| to January 1st, 1860, . . .                    | \$1,775,512 36 |
| The expenditures from May 1st, 1857, the date  |                |
| of the organization of the Board, to January   |                |
| 1st, 1858, were . . .                          | \$77,881 41    |
| Expenditures from January 1st, 1858, to Janu-  |                |
| ary 1st, 1859, were . . .                      | 507,487 86     |
| Expenditures from January 1st 1859, to Janu-   |                |
| ary 1st, 1860, were . . .                      | 1,179,246 47   |
| <hr/>  |                |
| Total expenditures from May 1st, 1857, to      |                |
| January 1st, 1860, . . .                       | \$1,764,615 74 |
| <hr/>  |                |
| Balance, January 1st, 1860, . . .              | \$10,896 62    |
| <hr/>  |                |

ANDW. H. GREEN,

*Treas. Board of Commrs. of Central Park.*

January 2d, 1860.



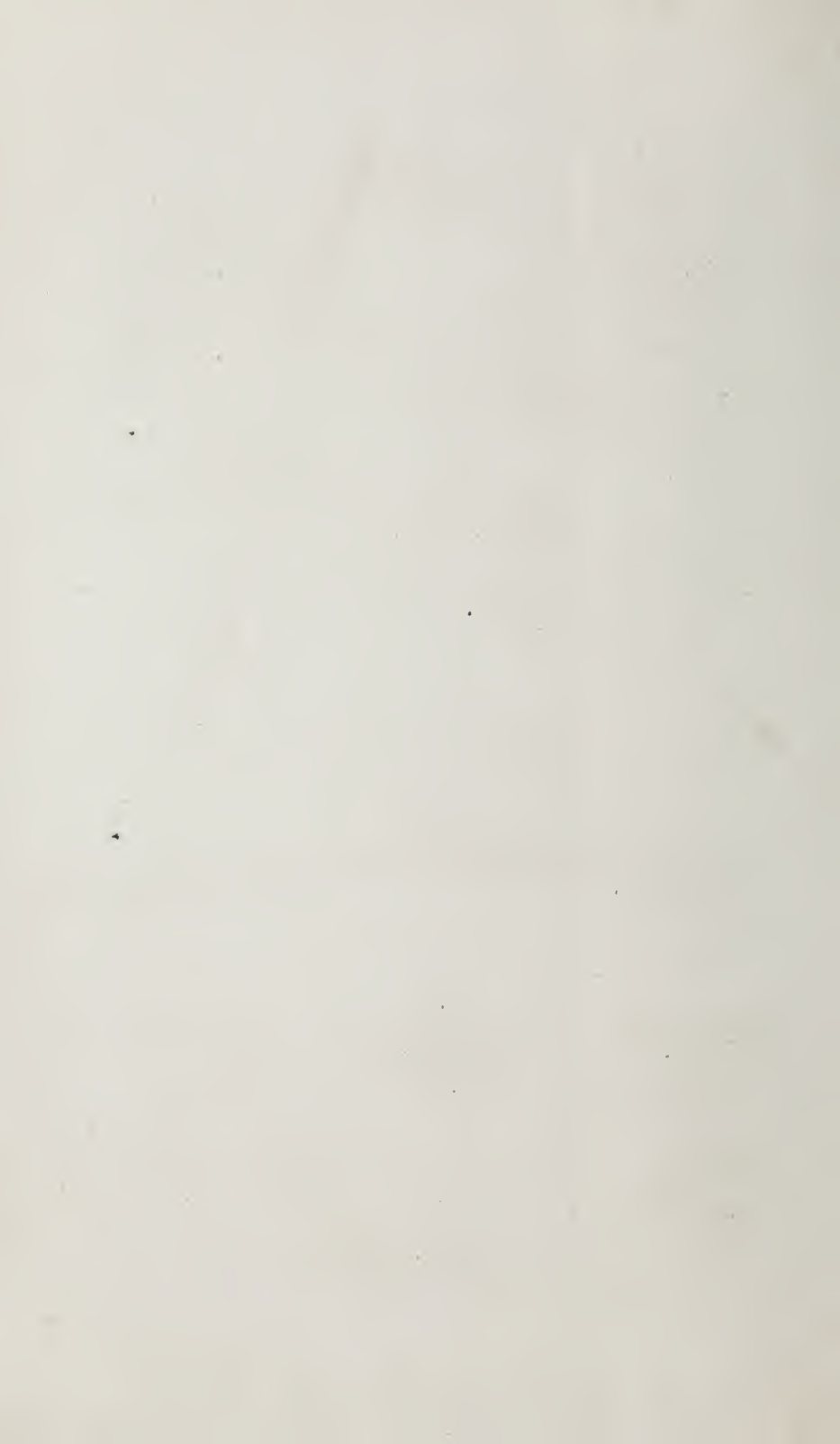
*C. Young, Architect, N. C. Allen, Ass't.*

**ARCHWAY UNDER CARRIAGE DRIVE  
FOR BRIDLE ROAD WEST OF PLAYGROUND**

*Lith. by Geo. Hayward, 171 Pearl St.*













C. VAUX, ARCHT. E. C. MILLER, ASSY.

SARONY, MAJOR & KNAPP, LITH. 449 BROADWAY, N.Y.

ARCHWAY UNDER FOOTPATH  
FOR BRIDLE ROAD SOUTH OF PLAYGROUND

## DESCRIPTION OF THE CENTRAL PARK,

*With an explanation of the purposes of the work already done upon the site, and of that in immediate contemplation.*

---

### SIZE AND FORM.

The Central Park is about two miles and a half long, and half a mile wide, bounded on the sides by straight parallel "avenues," and at the ends by streets crossing these at right angles. It is now enclosed by a rough, dry stone wall, four and a half feet high, in which there are gates at convenient intervals. The area enclosed is about seven hundred and sixty-eight acres, of which one hundred and thirty-six acres are occupied by the Reservoirs of the Croton Aqueduct, whence the city is supplied with water. Measures are in progress for adding a space of seventy-five acres, which will make the length of the Park 13,516 feet and its area eight hundred and forty-three acres.

### THE RESERVOIRS.

The old Reservoir covers thirty acres, and stands upon high ground in the centre of the Park. The embankment is faced exteriorly with dressed stone, and, except where obscured by the recent improvements, forms a conspicuous object in the view from nearly all points in the southern half of the Park. The new Reservoir, (the construction of which was commenced in April, 1858,) is irregular in outline, and, when completed, will cover one hundred and six acres. The Reservoirs are not under the control of the Park Commission, and are too much elevated for the water within them to form a part of its landscapes.

## DIVISIONS OF THE PARK.

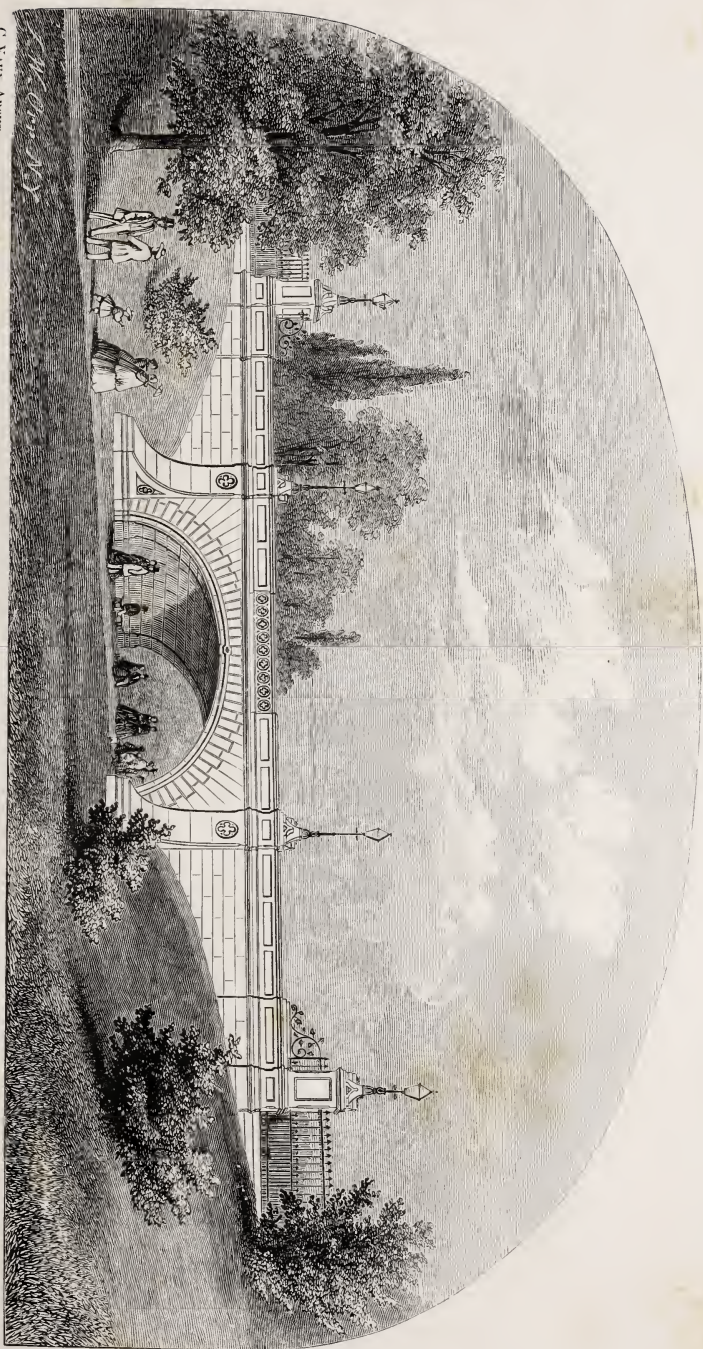
The Park is practically divided by the Reservoirs into two portions, the northern or upper park, containing 160 acres, the lower park containing 331 acres, and the connecting ground lying on both sides of the Reservoirs, 135 acres. It will be further subdivided by four thoroughfares, one crossing it between the Reservoirs, one at each end of them, and the remaining one near the middle of the lower park. These thoroughfares are to be so constructed, by means of tunnels and other contrivances, as not to interrupt the landscape, or practically effect any division of the Park. Roads and walks will cross them in such a manner, that when the trees and shrubbery by their side are somewhat grown, they will not be seen by the casual observer. They will be noticeable from no part of the Park, except at their extremities, where they unite with the exterior streets, at a higher grade than the surface of the Park; appearing as causeways, a few hundred feet in length, terminating upon a hill-side. One of these causeways near the Fifth avenue, at Sixty-fifth street, which is nearly completed, is pierced by an archway, in order to accommodate a walk, as represented in the adjoining wood-cut. The Park not being directly accessible from these covered ways, it will be unnecessary to close them at night, when the public are shut out from the Park itself. They will furnish the means of direct transit across the Park for business purposes, without causing inconvenience to its visitors.

Two of these roads are now nearly completed, one of them being already in use.

## TOPOGRAPHY OF THE SITE—THE LOWER PARK.

When purchased by the city, the southern portion of the site was already a part of its straggling suburbs, and a suburb more filthy, squalid and disgusting can hardly be imagined. A considerable number of its inhabitants were engaged in occupations which are nuisances in the eye of the law, and forbidden to be carried on so near the city. They were accordingly followed at





G. Vaux, ARCHT.

ARCHWAY UNDER TRAFFIC ROAD, FOR FOOTPATH, SOUTH EAST OF THE MALL.







ARCHWAY UNDER CARRIAGE DRIVE  
FOR TRAFFIC ROAD ACROSS THE PARK





night in wretched hovels, half hidden among the rocks, where, also, heaps of cinders, brick-bats, potsherds, and other rubbish, were deposited by those who had occasion to remove them from the city. During the autumn of 1857, three hundred dwellings were removed or demolished, by the Commissioners of the Central Park, together with several factories, and numerous "swill-milk" and hog-feeding establishments. Large tracts partially covered with stagnant water were superficially drained, and 10,000 cart loads of loose stone taken from the surface and conveyed to the borders of the Park, furnishing materials for the construction, during the winter, of the present enclosing wall. An elaborate topographical survey, and map of the ground was at the same time completed, under the direction of E. L. Viele, Esq., Civil Engineer.

Even after the removal of the buildings of all kinds, and the drainage of the pools, the lower park still presented a most confused and unsightly appearance. Before it had been taken for the Park, the grading of streets through and across it had been commenced, and the rude embankments and ragged rock-excavations thus created, added much to the natural irregularities of its surface. A swampy valley, (which will hereafter be referred to as the "southern valley,") extended from the corner of Sixty-fourth street and Eighth avenue to the corner of Fifty-ninth street and Fifth avenue. A similar valley (the "central valley,") extended from the junction of Seventy-seventh street and Eighth avenue to that of Seventy-fourth street and Fifth avenue. Between Sixty-seventh and Seventy-second streets, and adjoining Fifth avenue, was a tract (the "eastern plateau") of ten acres, moderately smooth, and used as a pasture and market garden. A similar tract (the "central plateau") of nearly equal dimensions, lay midway between the last mentioned one and the west side of the Park. Both tracts were rocky, and a portion of the smaller was a bog.

The remainder of the lower park was made up of low hills and hillocks, the rock of which they were chiefly composed everywhere cropping out, sometimes boldly, more generally barely breaking through the soil, not unfrequently with a considerable surface, nearly flat, in the depressions of which a few meagre shrubs and grasses struggled for existence. With the exception

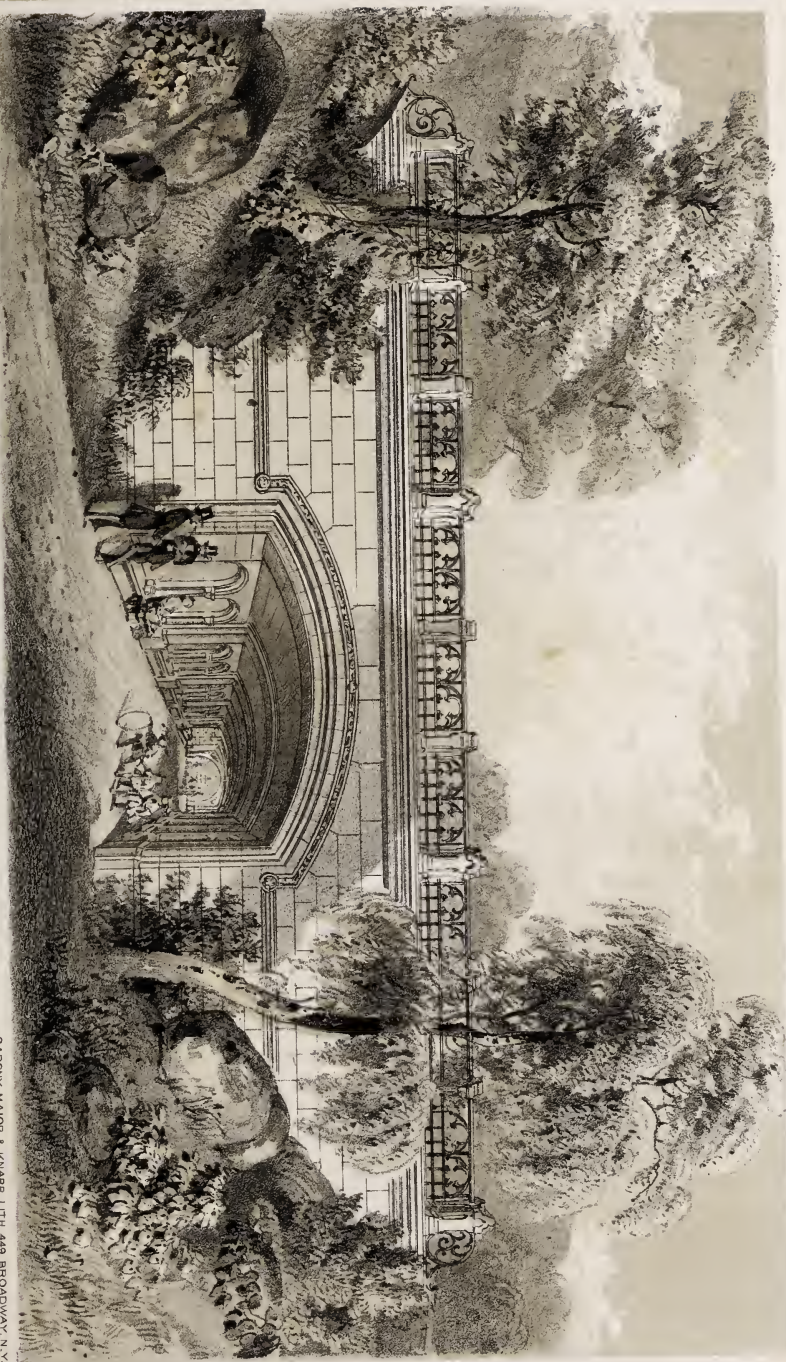
of portions of the two swampy valleys and the two ten-acre tracts above mentioned, and about three acres on Sixty-sixth street near Sixth avenue, there was not an acre in which the great underlying ledge of gneiss rock did not, in some form, thrust itself above the surface. Probably not a square rood could be found, throughout which a crow-bar could be thrust its length into the ground without encountering rock. Often in places where no rock was visible, it has been found, in the progress of the work, to be within from three inches to two feet of the surface, for long distances together.

#### MOTIVE OF THE PLAN.

The primary purpose of the Park is to provide the best practicable means of healthful recreation, for the inhabitants of the city, of all classes. It should have an aspect of spaciousness and tranquility, with variety and intricacy of arrangement, thereby affording the most agreeable contrast to the confinement, bustle, and monotonous street-division of the city. It should, that is to say, as far as practicable, present to the eye a charming rural landscape, such as, unless produced by art, is never found within the limits of a large town; always remembering, however, that facilities and inducements for recreation and exercise are to be provided for a concourse of people, and that the object of the scenery to be created is only to further the attainment of this end in the most complete and satisfactory manner. No kind of sport can be permitted which would be inconsistent with the general method of amusement, and no species of exercise which must be enjoyed only by a single class in the community to the diminution of the enjoyment of others. Sports, games and parades, in which comparatively few can take part, will only be admissible in cases where they may be supposed to contribute indirectly to the pleasure of a majority of those visiting the Park. The Park is intended to furnish healthful recreation for the poor and the rich, the young and the old, the vicious and the virtuous, so far as each can partake therein without infringing upon the rights of others, and no further.

Casual observers have been apt to think the selection of the





C. VAUX ARCHT. E. C. MILLER. ASST.

# ARCHWAY UNDER CARRIAGE DRIVE

FOR FOOTPATH LEADING TO S. W. ENTRANCE TO THE MALL.

SARONY, MAJOR & KNAPP, LITH. 449 BROADWAY, N. Y.





site an unfortunate one, its general ruggedness being rather forbidding, than expressive either of dignity or grace. But this was due very much to the absence of soil and foliage. As these are supplied, the quality of picturesqueness becomes agreeably prominent. Grass and shrubbery can be formed anywhere, but rocks, and those salient forms of earth-surface which are only found in nature where rock exists, can never be imitated on a large scale, with perfect success. Although, therefore, it will require a heavy expenditure to make the Park complete, the final artistic effect should be much finer than could have been expected upon a tract of the richest and most easily worked soil, the natural outlines of which were invariably graceful.

If the soil, which has been removed from the site of the lower park, could be replaced and the primeval forest restored, however,—only such walks and drives being constructed through it as would make all parts readily accessible,—the general effect would still be unsatisfactory, from the want of breadth and expanse in the landscapes. It would be—so to speak—monotonous in its irregularity, the eye soon wearying of the ceaseless repetition of rocks and hillocks, with meagre depressions of surface between them. To remedy this natural defect, three considerable pieces of ground were chosen by the designers, to be cleared of all obstructions and brought to level, or nearly level surfaces.

#### TREATMENT OF THE CENTRAL PLATEAU.

One of these, near the centre of the lower park, includes the central plateau of ten acres heretofore described as somewhat boggy and rocky, with nearly twenty acres more, lying to the westward and southward. The boggy portion has been filled-in to an average depth of two feet, and all rocks protruding have been removed by blasting; some large ledges of rock adjoining, have been reduced, and the intervening depressions filled in a similar manner, all remaining rock surface has then been covered with two feet of soil, and thus about thirty acres of level or but slightly undulating ground has been formed. This will soon appear as a stretch of turf about a quarter of a mile across, unbroken by a single road or foot-path. It may be

used upon special occasions, for military displays. Ordinarily it will be like a great country green or open common,—a place where children may run about and play until they are tired ; in nobody's way, and without danger of being run over, or injured if they fall. A rocky ridge bounded the plateau on the northeast, which has been reduced by blasting sixteen feet, throwing open from opposite points the two finest views on the park. The rock and earth removed from the ridge, together with that taken from a low hill, a quarter of a mile to the southward, have been used to fill a swamp lying east of the Green, and this being further covered with made-soil to the depth of four feet, an additional level space has been obtained, about eighty rods in length and twelve rods in breadth. This space has been planted with four rows of American elms, forming a broad mall, and is intended to be provided with a fountain at either end, seats for visitors and accommodations for an orchestra. At its southern extremity, gentle slopes of turf, little broken by rocks or trees, will conduct to a lawn-like surface, formed upon the smooth ground before described as the eastern plateau. Views of an open and tranquil character are thus obtained, for a quarter of a mile in either direction, terminating in a forest obscurity, and the general ruggedness of the park is, in this vicinity, almost obliterated.

#### TREATMENT OF THE SOUTHERN VALLEY.

All rocks of insignificant size, and such as would have given an appearance of disagreeable barrenness, have been removed from the greater portion of the southern valley. Some low parts have been filled up, and a level surface fourteen acres in extent thus obtained, upon which no trees will be planted, it being intended more especially as a play-ground for match games at cricket and base-ball. Some fine rocks overhang the lower and narrower end of the valley, which will be occupied by a pond of about five acres in extent, rendered necessary at this point by other than picturesque considerations.







C. VAUX, ARCHT. J. W. MOULD, ASS'T

SARONY, MAJOR & KNAPP, LITH'S 449 BROADWAY, N.Y.

VIEW OF TERRACE, ETC.  
LOOKING SOUTH FROM THE RAMP E.



## TREATMENT OF THE CENTRAL VALLEY.

The western part of the central valley has been made more spacious by the removal of the smaller rocks, and the earth surrounding the larger, so as to form a shallow basin of irregular outline. This basin will be almost entirely occupied by a pond, twenty acres in extent, the view across which, from the most favorable point, will be of considerable breadth, and entirely unbroken for upwards of a quarter of a mile.

This is the pond which, having been each year filled in the autumn, has, during the last and the present winter, afforded welcome accommodation to many thousand skaters.

## THE RAMBLE, THE WATER-TERRACE, AND THE BELL-TOWER.

To the North and East of the pond is a broad hill-side, broken by ledges of rock and bestrewn with boulders. It furnishes an interesting picture viewed from almost any point, but particularly so from the end of the mall; on the descent from which to the pond an ornamental stone terrace is under construction. (This, the principal architectural feature of the Park, is shown, as if complete, in a lithograph.) At the highest and most remote part of the hill, as seen from this terrace, a small tower will be erected, and this will be the vista-point of the avenue of the mall. Looking northward from the terrace it will be the only artificial structure in sight (the Reservoir being "planted out" and the rising ground on the right and left shutting off the city). The whole breadth of the Park will be brought into this landscape, the foreground of which will be enriched with architectural decorations and a fountain, the middle-distance, composed of rocks, with evergreens and dark shrubs interspersed among them, reflected in the pond; and the distance extended into intricate obscurity by carefully planting shrubs of lighter and more indistinct foliage among and above the gray rocks of the back ground. This hill-side, being isolated in position, is crossed by no road but entirely laid out with secluded walks bordered by shrubbery, and the work upon it was so far advanced during the first year's operations that, already the last summer, it proved a very satisfactory re-



sort to the public. Some of the most promising parts of it, however, are as yet but meagrely furnished, and whatever charms it has, will, in a few years, be immeasurably increased. The bell-tower at the summit offers the best position from which to obtain a bird's-eye view of the whole Park, and of the work going on within it. It is a temporary structure, used to transmit orders to the officers of the work, by signal, and is open to visitors during the day.

The principal landscape features of the lower Park, so far as they are matters of immediate construction, have thus been indicated.

#### PLAN OF THE ROADS AND WALKS.

The Park will be chiefly valuable as furnishing a place for agreeable exercise, (or, as the phrase is, "taking the air,") as a relief from the confinement of houses and streets. This will be obtained by the mass of the community, by riding, driving, or walking, as best suits the inclination or means of each individual.

In order to the highest enjoyment of either of these modes of exercise, each needs to be pursued in a great degree separately from the others. A carriage coming directly upon the course of a pedestrian or of a man on horseback, is often an annoyance, sometimes positively dangerous. A horseman riding close upon a man on foot, on the same path, will unpleasantly disturb him, even without coming in direct contact. The mere consciousness that one's path may be crossed by a horse or carriage, causes with some a feeling of anxiety. The sunken and tunnelled street thoroughfares across the Park were planned to remove what would otherwise have been a ceaseless annoyance. Extending the application of the same expedient, several miles of gravelled walks have been laid out, carried by arched passages under the drives when necessary, by means of which all parts of the lower Park may be traversed on foot, without encountering a single carriage or horseman. The rides are everywhere in like manner made independent of the drives, but horsemen can enter the carriage-roads if they choose.



C VAUX ARCHT. E.C. MILLER ASST

ARCHWAY UNDER CARRIAGE DRIVE  
FOR FOOTPATH EAST OF THE RAMBLE.

SARONY, MAJOR & KNAPP LITH. 449 BROADWAY N.Y.









C. VAUX ARCHT. E. C. MILLER ASST.

SARONY, MAJOR & KNAPP, LITH. 449 BROADWAY N. Y.

ARCHWAY UNDER CARRIAGE DRIVE  
FOR BRIDLE ROAD NEAR ENTRANCE FROM 5<sup>TH</sup> AVE AND 59<sup>TH</sup> ST

Walks also generally accompany the drives, on one or both sides, within conversing distance.

The character of the arched passages referred to, is shown in the accompanying illustrations.

The principal roads, as will be seen on the map, are carried near the exterior, yet at such a distance that the boundary may easily be obscured from them.

#### TREATMENT OF THE RESERVOIR SLOPES.

The treatment of the ground immediately adjoining the reservoirs remains somewhat undetermined, owing to an uncertainty which exists with regard to the final arrangements to be adopted by the Croton Aqueduct Board.

#### TREATMENT OF THE UPPER PARK.

The natural surface of the upper park is much more homogeneous than that of the lower. The plan is of corresponding simplicity. Near the base of the rocky ridge upon which the northern embankment of the new reservoir abuts, a transverse road will cross the park on a similar plan with those below. North of this, extending to One Hundred and Third street, and midway between the east and west boundaries of the park, two connected plateaus of turf, amounting to about eighteen acres, have, during the last year, been formed, (that being all the space which the rocky ledges leave available.) The roads and walks will pass along the more broken ground to the east, west and north of these. The rivulet in McCowan's pass will be damned so as to form a pool, at the west end of which the carriage-road will be carried across the valley upon a stone bridge of three arches. The mode of laying out the grounds forming the extreme northern portion of the park has not been definitely decided upon, on account of the prospect of an extension of its limits in this direction, and the establishment of an observatory on the bluff.



## THE ARBORETUM.

The explanation of the plan which has thus far been given, is intended to enable the public to understand more readily the value of the work which has already been done, and the nature of that for which expenditure will principally be made during the ensuing season.

It is further intended to introduce an Arboretum, in which, within a space of about sixty acres, will be arranged in as natural a manner as possible, consistently with convenience for study, specimens of every tree and shrub which can be grown upon the site in the open air. The hillside and valley between the Fifth avenue and the east drive of the upper park is reserved for this purpose.

In the general planting of the park, it is hoped, that every kind of tree which will flourish in the climate may be introduced.

## WINTER DRIVE.

It is intended to arrange along the west side, between Seventy-second and One Hundred and Second streets, a winter drive, about a mile and a half in length, planted somewhat thickly with evergreens; deciduous trees and shrubs being introduced only so far as is necessary to avoid a monotonous and gloomy effect. Open glades of grass will break the uniformity of these plantations of evergreens, as the effect aimed at is not so much that of a drive through a thick forest crowded with tall spindling trees, as through a richly wooded country, in which single trees and copses have had plenty of space for developing their distinctive characteristics to advantage.

## PLANTING.

The last remark applied to the general intention of planting the park, in which American trees of the stateliest character, standing somewhat openly, are designed to predominate where ever the nature of the surface will permit. The general rugged-

BRIDGE.  
FOR FOOTPATH WEST OF THE RAMBLE.



CLARK ARCHT. E.C. MILLER ASST.

SARNEY, MAJOR & SONS, LITH. 439 BROADWAY, N.Y.



ness of the site, however, will lead to a more liberal use of evergreens, shubbery, and especially of climbing and trailing plants than is customary in European parks.

#### INCIDENTS.

Ground is reserved for a geometrical flower-garden with wall fountains, for public houses of refreshment; residences of the superintendent and head gardener; a police-station, and for an Astronomical Observatory.



## REFERENCES TO THE MAP.

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|  |          |
|--|----------|
| Area of Pond at A.....   | 5 Acres. |
| “ “ B.....   | 20 “     |
| “ Open ground at C.....  | 10 “     |
| “ “ “ D.....   | 15 “     |
| “ Ground known as the Ramble between Pond and<br>Reservoir E ..... | 32 “     |
| “ Open ground at F.....  | 11 “     |
| “ “ “ G.....   | 20 “     |

Site of proposed Pond in McGowan's Pass, H, H, H.

Area of Arboretum ..... 68 “

Length of Broad Walk (I, I), 1,212 feet, width 35 feet.

Site reserved for Refectory. J.

Old Arsenal proposed to be altered for a Museum. L.

Site for an Orchestra. M.

“ “ proposed Terrace for a concourse of Carriages. N.

“ “ “ Flower Garden. O.

Tunnel.—Length, 142 feet; width, 40 feet; height, 19 feet. P.

Roads and Walks finished, are represented in full lines, and colored.

“ “ “ partly finished “ “ dotted lines colored lightly.

“ “ “ not commenced “ “ dotted lines not colored.

Grounds planted or in grass, or ready for planting or seeding, are colored green.

Water is colored blue.

Black figures show the width of Roads.

Red figures show the elevations above Tide Water.

Red lines, full or dotted, are contour lines of the original surface, and where these are shown, the ground has not yet been broken.

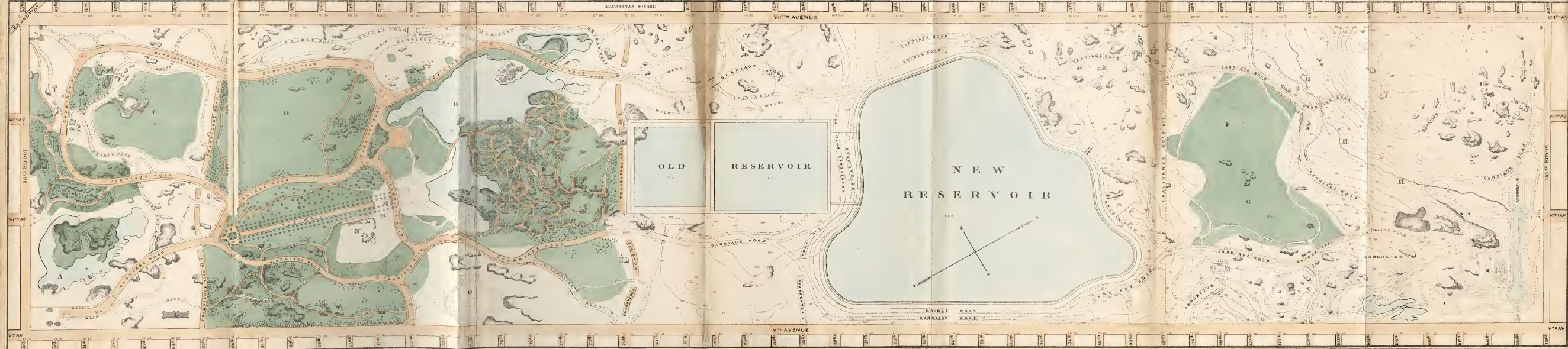
Rocks that are especially prominent, are indicated by line shading.

Trees and Shrubbery are shown by the usual topographical indications.

The red figures on the Fifth and Eighth avenues, and 59th and 110th streets, show the elevations of the established grades.



MAP OF THE CENTRAL PARK  
Showing the progress of the Work up to January 1<sup>st</sup> 1860.  
SCALE 400 FEET TO THE INCH

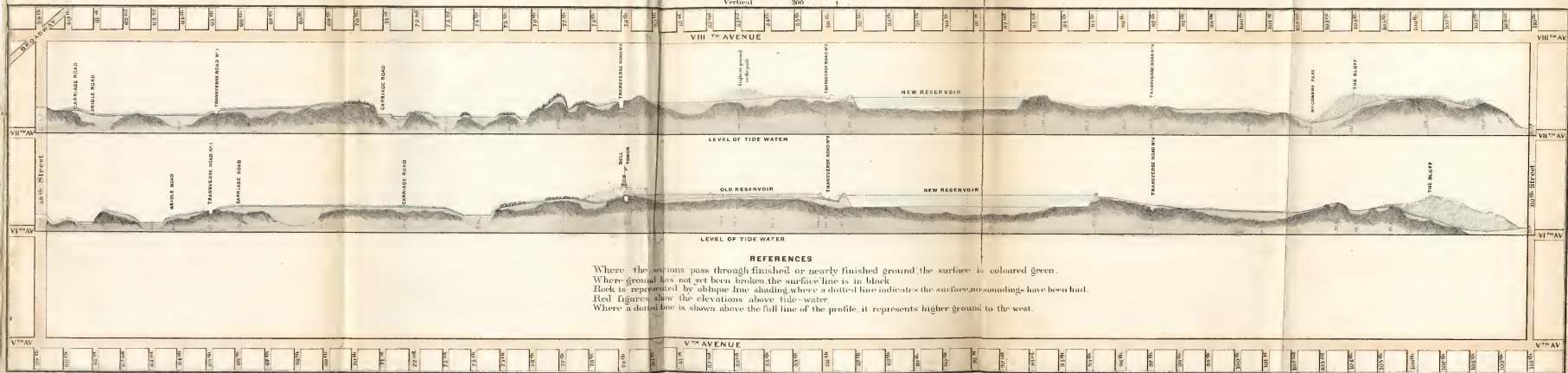




# PROFILES OF THE CENTRAL PARK

on the lines of the VI<sup>TH</sup> & VII<sup>TH</sup> AVENUES prolonged from 39<sup>th</sup> to 110<sup>th</sup> Street.

Horizontal scale 600 feet to 1 inch  
Vertical 200 1



## REFERENCES

Where the sections pass through finished or nearly finished ground, the surface is coloured green.  
Where ground has not yet been broken, the surface line is in black.  
Rock is represented by oblique line shading, where a dotted line indicates the surface, no soundings have been had.  
Red figures show the elevations above tide-water.  
Where a dotted line is shown above the full line of the profile, it represents higher ground to the west.





CENTRAL PARK,

January 26th, 1860.

To ANDREW H. GREEN, Esq.,  
Comptroller of the Park:

Sir,—The enclosed reports of the Superintending Engineer, and of the Draining Engineer, comprise detailed statements of the progress of the work during the year 1859, in all respects, except that of planting, statistics of which, so far as practicable to be published, have already been furnished.

In addition to that engaged in the construction of the Park, a force is employed in the regulation of its public use, and in the protection of the property of the Commission, as follows:

- 1 Inspector,
- 2 Sergeants,
- 2 Asst. Sergeants.
- 40 Park-keepers,
- 8 Gate-keepers,
- 2 Station-men.

The duty of the Park-keepers is, by timely instruction, caution, and warning, to prevent disorderly and unseemly practices upon the Park, and thus, as far as practicable, to avoid occasion for arrests. Mr. Renwick, the inspector, has reported, during the year 1859, two hundred and twenty-eight arrests, for causes as follows:

|  |     |
|--|-----|
| Violation of the Ordinances of the Commission..... | 111 |
| Drunkenness and disorder.....                      | 75  |
| Assault and battery.....                           | 21  |
| Petty larceny.....                                 | 12  |
| Indecent conduct.....                              | 7   |
| Vagrancy .....                                     | 1   |
| Insanity .....                                     | 1   |

Most respectfully,

FRED. LAW OLMSTED,

Architect-in-Chief

and Superintendent.



REPORT OF THE SUPERINTENDING ENGINEER  
ON THE  
PROGRESS OF THE WORK ON THE CENTRAL PARK.

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TO FREDERICK LAW OLMSTED, Esq.,  
Architect-in-Chief:

Sir,—In accordance with instructions, I submit the following report of the progress and condition of the work under my charge, up to 1st January, 1860, together with a map of the Park, which presents a general view of the works completed and in progress, or that have been laid out and not yet commenced, and also two profiles or vertical sections, showing the inequalities of the surface of the ground, lengthwise of the Park, from Fifty-ninth to One hundred and tenth street.

THE TRIANGULATION OF THE PARK.

The maps of the Park heretofore made, have had for their basis a system of parallel and rectangular cross-lines which, in the original surveys, were marked out and designated at their intersections, on the ground, by stakes.

Owing to the impossibility of preserving the numerous points, and the liability to error from their disturbance or removal in the progress of construction, and also for greater accuracy than the system was found to admit of, it was deemed necessary to adopt a different method as a ground-work for the final surveys.

This has been done during the past season by triangulating the whole area of the Park, and establishing a series of permanent points, mostly on rocks that will not be disturbed.

These points, with the accompanying series of triangles, forming, by their several sides, bases that are carefully computed, afford the means of attaining with facility the requisite accuracy in tracing out the work.

When the Park is completed, the intricate and peculiar character of the work—embracing carefully studied designs of ornamentation, and especially systems of sewers, drainage, supply and distribution of water, gas-pipes, silt-basins, filters, &c., *beneath the surface*—renders it necessary that the greatest exactitude should be observed in the representation of the plans to prevent any portion of the work from being marred by those who will have it in keeping.

The system of triangulation is connected with the coast survey, which has several points located in the Park and its immediate vicinity.

This work has been done by Mr. J. H. Pieper, Principal Assistant Engineer.

#### THE DRIVES.

Three and one-third miles of drives are now completed.

This work has all been done during the past year, except about 1,200 feet constructed as samples of three different kinds of roads, in the latter part of 1858.

Of the three and one-third miles of road finished—

A length of 4,970 feet is 60 feet wide.

“ “ 1,315 is 50 to 55 feet wide.

“ “ 9,640 feet is 45 feet wide.

“ “ 1,345 feet is 25 to 32 feet wide.

In addition to this,  $2\frac{4}{5}$  miles of road have been graded, or mainly graded, for the reception of the road material, and  $3\frac{3}{4}$  miles have not been commenced, making in all a total length of drives on the Park as designed— $9\frac{1}{2}$  miles.

In the construction of the drives three different methods have been followed on different portions. The first is known as the “Telford Road;” the second as the “McAdam Road;” and the third is a combination of the Telford principle as to foundation, with a road surface of gravel instead of broken stone.

The Telford and McAdam methods have been chiefly followed.

No pains have been spared in the construction of these roads in all their details, to make them as perfect and complete as practicable.

A description of the several processes of the work, will give an idea of its substantial character, and may be useful as a matter of record. Omitting specifications, and some minor details, it is briefly as follows:

1st. The road-bed is trimmed, after the main grading is done, to a crowning form, having a rise in the centre for roads of 45 feet width, of 6 inches; and the ground is made firm and even by the use of a heavy roller.

2d. Drain tiles are laid three feet deep under each gutter for the sub-drainage.

3d. Alongside the drain-tiles and at the same depth, are laid vitrified glazed pipes for receiving and carrying off the water falling on the surface of the roads. The surface-water is received into these pipes through silt-basins, grated at the top, which are constructed under the gutters at intervals of about 300 feet.

These under-drains, after being conducted along the roads various distances, according to circumstances, enter the main sewers or discharge into the ponds through filters constructed to intercept and retain mud and impurities washed from the roads.

4th. Upon the prepared road-bed a pavement (except for McAdam road) of quarry stones is set by hand, the stones being from 7 to 10 inches deep, 3 to 6 inches thick, and generally not of greater length than twice their depth, the aim being to use stones of as nearly a uniform size as possible, and parallel sided. The stones are laid lengthwise across the road, with the broadest edges down. After being set closely together, they are firmly wedged by inserting and driving down, in all possible places, stones of the same depth, until every stone is bound and clamped in its proper position.

5th. The projecting points of the stones on the top of the pavement are next clipped off with a light hammer, and the spalls and chips at the same time worked into the interstices

not already filled by the process of wedging. By this operation the pavement is reduced to an even surface and to a depth of 7 to 8 inches.

The pavement or substratum of the road is then ready (after laying the gutters) for the reception of the finishing material of the road.

6th. *Gutters*.—These are made on each side of the roads from two to three feet wide, and in some cases, where required for extra drainage, four to five feet wide.

They are made in concave form, of quarry stones, sufficiently rough-hammered to fit them compactly together, and set 6 to 10 inches deep, in the manner of an inverted arch.

The outer edge of the gutter has a curb of "Hudson River blue-stone," 3 inches thick, and set 16 inches deep, the top of which is flush with the sod outside of the road, and is pitched inward to meet the concave line of the gutter. All gutters are laid on a filling of gravel or broken stone. They are surfaced true and even by the use of rammers, and the interstices between the stones are filled with gravel or fine stone chips.

Several other varieties of gutter have been tried, of brick, cobble-stone, and the usual city form of curb and flag stone, but the form above described is preferred and has generally been followed.

The description of the several processes of the work, thus far, applies equally to the Telford and the gravel roads.

The 1st, 2d, 3d, and 6th items only, apply to the McAdam road.

7th. Proceeding with the Telford Road—broken stone of the ordinary McAdam size (to pass through a  $2\frac{1}{2}$  inch ring) are spread evenly over the pavement in successive layers, and rolled down until the full depth is about 5 inches. The first rolling is done with a light roller, to avoid disturbing the paving stones.

On some portions of the Telford road, the supply of Park boulders being inadequate, broken stone from the quarried (*gneiss*) rock of the Park have been used for the bottom part of



the covering to the pavement, and the harder and superior stone from the Park boulders placed on top.

8th. On the top of the broken stone, about one and a half inches in depth of gravel is evenly spread, and the whole is thoroughly rolled down with a heavy roller, weighing  $6\frac{1}{2}$  tons. Both stone and gravel are kept moistened by sprinkling carts, while the rolling is going on, the gravel working down into the interstices of the stone under the roller, consolidating and binding the whole material. When completed the whole depth of pavement, stone and gravel is 12 to 13 inches.

Great care has been taken to free the broken stones, before using them, from detritus and dirt. It has been found, however, impracticable to consolidate them and make them "bind," when placed on the road, by the heaviest rolling, without intermixture with some material adapted to act as a *matrix*. Hard gravel, as above stated, has been mainly used for this purpose, as being preferable to detritus and dirt, which is recommended by some road-makers.

The *gravel road*, as constructed, varies only from the Telford in the substitution above the pavement of gravel instead of broken stone. The gravel is applied in layers, and rolled down in the same manner as the broken stone in the Telford road, until it has a depth of about 5 inches.

The gravel used, from Royer Hook on the Hudson River, is unusually free from dirt or earthy matter, and when spread in a body of five inches in depth on the road, a similar difficulty was experienced—as to the binding properties—to that mentioned in relation to the clean broken stone.

The gravel would pack well under the roller, and retain its firmness, so long as it retained its moisture, but when dry it became loose again. In this case resort was had, as the best alternative, to the detritus and scrapings left after the removal of the heaps of McAdam stones from the places where they were broken.

This material was considered better than loam or clay, and the trial has proved successful and satisfactory. The surface of the gravel road, finished with this intermixture, has retained its firmness, under constant use, during several months.

Limestone chips (refuse of lime-kiln quarries), have also been tried for the same purpose, lightly spread over the top layer of gravel, and rolled in, with good effect. It is probably the best substitute for the detritus that can be had. If used in the smallest practicable quantity to produce the effect, it soon disappears from the surface of the road, and obviates the disagreeable dust, in dry weather, and the equally disagreeable tenacious mud in wet weather, to which limestone roads are liable.

The *McAdam road* has, in common with the other roads, as before stated, the 1st, 2d, 3d and 6th of the preceding items of detail. It is in other respects constructed in strict accordance with the most approved methods practiced for this kind of road. The full depth of road material is, as in the other case, twelve to thirteen inches; seven inches of the bottom has been composed of the gneiss stone and the remaining five inches on the top, of the more durable Park boulder-stone. The stone has been applied in successive layers and rolled; and as far as time would permit, the work has been retarded in the different stages in order to obtain the benefit of the travel of the working teams of the Park over it, to facilitate its consolidation. The surfacing with gravel, and the final rolling, have been done in the same manner as described for the Telford road.

The silt-basins and underdrains have continued to discharge freely, and no ice has been formed in them, during the coldest weather. Silt collects in the basins, which has to be removed from time to time.

The samples of these roads that were first constructed (in 1858,) had a depth of fifteen inches of road material. Recent examinations show, that the frost, during the present winter, has penetrated the ground from six to fifteen inches below the road material on the roads of twelve inches depth. Frost is the most destructive element to be encountered in the formation of good roads in this climate, and the more completely it can be excluded from the road-bed, the more perfect and enduring the road will be. It is not practicable on the ground of expense, to exclude it entirely, but whatever plan of road may be pursued in the continuation of the work, it is desirable that the depth of materials should not be less than that of the original samples.

## THE BRIDLE ROAD.

About 8,600 feet of grading has been done for this road. No portion of it has yet been completed. The width is intended to be 25 feet, and the plan proposed is to use gravel and sand principally in its formation; the depth of the material to be 12 inches.

The total length of this road, as at present designed and represented by the map, is  $5\frac{1}{3}$  miles.

## THE GRAVEL WALKS.

|  |                        |
|--|------------------------|
| The length of walks completed, including that of the mall, is..... | $7\frac{1}{4}$ miles.  |
| Not completed.....   | $14\frac{1}{2}$ “      |
| Total length as represented by map.....                            | $21\frac{3}{4}$ miles. |

These walks are laid out various widths, from  $3\frac{1}{2}$  to 16 feet, the main walks being from 12 to 16 feet wide, and the central walk of the mall, 1,212 feet long, 35 feet wide.

They are composed of rubble and small or roughly broken stones, deposited generally 8 inches in depth, with about 3 inches of gravel on the top. They are chiefly underdrained by drain tiles, and are firmly rolled on the surface. The gravel that has been mainly used is a dark slate gravel, that readily packs and forms a very agreeable surface for the foot. It is not as enduring, however, as the harder silicious or granitic gravel that has been more recently used. This latter gravel has not been fully tried, as to its packing or binding qualities on the surface of walks, and it may be necessary to use some intermixture of less pure substances, as in the case of the roads, to make it entirely successful.

## THE TRANSVERSE ROADS.

Four of these roads, of nearly equal lengths, cross the Park from east to west; their aggregate length is  $2\frac{1}{7}$  miles. The two southern roads only, (designated Nos. 1 and 2) have been commenced.



No. 1 is mainly completed, and was opened for city use on the 12th day of December last.

No. 2 is well advanced in progress, the completion of the rock-cut near the southeast corner of the old reservoir, and the tunnel near the southwest corner, being the principal points of the grading yet to be done.

An opening was made through the tunnel in August last, and the roof appears, thus far, firm and reliable. This road can be opened for use by the middle of next season. The drainage of these roads, they being for the most part sunken below the natural surface, has been attended to with care, and ample provision made for the purpose.

The width between the exterior side walls is 40 feet, which is designed to include a roadway of 27 feet, and sidewalks of  $6\frac{1}{2}$  feet each. The side walls are in all cases made not less than 8 feet high above the grade line of the road, and a greater height where the depth of the cuts in earth, or bridge approaches require it. They are substantially built of rubble masonry, the face stones and  $2\frac{1}{2}$  feet of the top being laid in cement. About 2,200 lineal feet have been built or mainly built on Road No. 1, and 2,100 lineal feet on Road No. 2.

Five bridges, carrying the Park drives, bridle road, and walks over these roads, have been built or partly built: the foundation of the sixth has been laid. Three of the bridges on Road No. 1 are completed, with the exception of a small amount of masonry in the parapets, and two on Road No. 2 have been carried up to the springing line of the arches. The design as to these bridges is, in addition to the service brought upon them by the Park carriage roads, to cover about twenty-five feet of the outer ends with earth 3 to 4 feet deep, to admit of the planting of shrubbery upon them. The masonry has been made of the strongest and most enduring character. All but the arches are built of stone, close hammer-dressed for the face work, obtained from the excavations (gneiss rock) in grading, and prepared on the Park. The arches are of best quality, hard burnt bricks. The coping and ring stones, for one bridge only, have been obtained from beyond the Park. The quantity of masonry of all kinds in the bridges, laid during the past



season, is 13,360 cubic yards. The aggregate length of the six bridges built or in progress is 717 feet.

The span of each is 40 feet. The height of arch above the roadway, at the crown, is 15 feet.

The number of bridges of this description, designed for the four transverse roads, is 11.

These bridges, as well as the transverse roads, of which they are a part, are designed to be mainly concealed from view from the Park, and are therefore built in a plain manner, without attempt at ornament.

#### THE ORNAMENTAL BRIDGES.

Two bridges of this description, designated respectively Nos. 2 and 4, have been completed; Nos. 1, 3, 5, 6, and 7, are completed, with the exception of the balustrades, and two, Nos. 11 and 12, are in progress.

The dimensions and adaptation of these bridges are as follows:

Nos. 2, 6, and 11, are for passing the bridle road under carriage roads, and are 65 feet, 80 feet, and  $81\frac{1}{4}$  feet in length respectively, and have spans of 24 and 25 feet, and height of arch above roadway of 11 to  $13\frac{1}{4}$  feet.

No. 7, of 47 feet length,  $37\frac{1}{4}$  feet span, and 14 feet height of arch, carries transverse road No. 1, over a walk.

No. 3, of  $47\frac{1}{2}$  feet length, 14 feet span, and  $9\frac{1}{2}$  feet height of arch, carries a carriage road over a walk.

No. 1. The Terrace bridge connected with the Water Terrace, at the head of the Promenade, has wrought-iron beams, span 27 feet, and height  $13\frac{1}{2}$  feet, carries a carriage road and walk over the approach from the Promenade to the Terrace.

No. 12, with wrought-iron beams, length 65 feet, span 15 feet, and height 12 feet, carries a carriage road and walk, over a walk or approach to the intended Flower Garden.

No. 4, of 66 feet length, 27 feet span, and  $11\frac{1}{2}$  feet height of arch, carries a carriage road and walk over the channel connecting the main and the western portions of the central lake, and No. 5 is a wrought-iron foot bridge spanning the contracted

On page 54 the height of the Terrace Bridge is stated at  $13\frac{1}{2}$  feet; it should be 16 feet.



part of the central lake, west of the Water Terrace—the span being  $87\frac{1}{2}$  feet, and the height, above the surface of the lake,  $9\frac{1}{2}$  feet. This bridge is constructed with one movable abutment resting on iron balls to allow for the expansion and contraction of the iron.

The materials and workmanship in these bridges are intended to be of the best description, applicable to such structures. The bulk of the stone used is from the gneiss rock of the Park.

The facings of two of the bridges that are built, Nos. 2 and 3, are of Philadelphia brick with (New Brunswick) freestone trimmings; Nos. 6 and 7 have both facings and trimmings of freestone. No. 4 has facings and arch of Park stone, with freestone trimmings.

The Terrace bridge, No. 1, has facings and trimmings of freestone, as far as completed, with some other varieties of stone to be added hereafter.

The quantity of masonry of all kinds in the nine bridges built, or in progress, is 12,800 cubic yards; all of which, except about 1,550 cubic yards, has been laid during the past year. The weight of the iron foot bridge across the central lake is estimated when complete at  $98\frac{1}{2}$  tons. Its extreme width is  $15\frac{3}{4}$  feet, the width of pathway is 12 feet, and extreme length,  $141\frac{1}{2}$  feet.

The whole number of ornamental bridges of this kind designed for the Park, is about thirty. Besides these, other smaller bridges of wood, stone, iron, &c., of rustic and other forms, are designed, one of which has been completed, and two others are in progress.

Four temporary bridges of timber and plank, have been put up to connect and bring into use the drives at the sites of unfinished bridges.

#### THE LAKES.

The excavations for the south lake, which is about five acres in extent, are mainly completed; some trimming up, sloping, and walling around the margin remain to be done.

A vaulted gate-chamber and waste weir of substantial masonry, has been constructed at the outlet, from which a sewer



is to be extended to connect with one of the city sewers leading to the East river.

The bottom of this lake, except where it is rock, is clay intermixed with fine sand, and is firm and impervious—or nearly so—to water, and no material loss by infiltration is apprehended. The drainage area surrounding this lake within the Park is 163 acres.

This will give it an adequate natural supply of water. Should it be necessary to resort to flushing the surface of the ice, in winter for skating—as in the case of the larger central lake—the water for this purpose will be drawn from the general system of water distribution for the Park. The quantity of water that may be required for flushing this and the central lake, is embraced in the general estimate of water supply for the latter lake.

#### THE CENTRAL LAKE.

This lake was completed in December last, with the exception of a small amount of work at the extreme northern point (which can be done next season without drawing off the water,) and the water entering from the natural sources of supply, was shut in by closing the gate at the dam.

The arrangement of this lake is for a summer depth of seven feet and a winter depth (for the greater security of persons frequenting it for skating,) of four feet.

The area covered by the summer level of the water is  $20\frac{1}{10}$  acres, and by the winter level  $17\frac{7}{10}$  acres.

The shore line around the lake, owing to its great irregularity, has a length of  $2\frac{1}{10}$  miles.

A large amount of earth has been excavated to form the basin, all of which has been profitably used for filling, grading roads, &c., in the vicinity.

The shores have been securely walled  $2\frac{1}{2}$  feet in height below the summer level, and at the base of the wall, six inches above the winter level, a gravel walk 5 to 6 feet wide for winter use has been laid, making nearly the entire circuit of the lake. From this walk the bank has a gentle slope to the bottom of the lake. All the inlets for the drainage into the lake, likely to

bring impurities or turbid water are provided with filters. There are four of these, some of them receiving two or more sewers or drain pipes from different directions. They are adapted only to the mechanical filtering and deposit of sediment, such as would be objectionable or offensive in so large a body of water not intended specially for drinking or culinary purposes.

The manner of construction of these filters (which can only be shown by the drawings) and the nature of the drainage water entering them, will probably not render a renewal of the filtering materials necessary very frequently: the plans have been adapted to such renewal, at a moderate expense when occasion requires. Quarry-stone, rubble, and gravel have been used for the filtering material with open chambers to receive sediment that can be cleaned or flushed out with facility, whenever an accumulation is formed. The filters are wholly beneath the surface of the ground, and are entered by man-holes.

Further observations of the drainage and natural and incidental sources of supply and loss of water to this lake, since the date of my previous report on this subject, (February 28th, 1859,) have confirmed the reliability of the data and results that were then given. The peculiar circumstances of the drainage of the Park, it is found, will admit of a higher percentage of rain-fall being taken than was then assumed as available for the lake.

An addition to the supply of water then taken into the estimate, has also been effected which is likely to be of some importance. The waste sewer of the two Croton reservoirs has been tapped near its entrance to the fifth avenue at eightieth street, and the waste and leakage water from these two sources, is conducted by a sewer into the lake.

These facts, together with some changes that have since been made, in the arrangements of the lake, would, if applied to the calculations, favorably modify the previous results. It will be sufficient at present to say, that the conclusions of the former report [p. 78, 2d Ann. Rep. of Board of Commissioners, 1859] are entirely safe, not only as applicable to this lake, but that

the quantity of water estimated for flushing the ice, during the winter, will suffice for both the *central* and the *south lake*.

The arrangements that have been made for flushing the central lake, by hydrants, with the Croton head of water (the latter not before assumed), and the further experience of the present winter, show that less water will generally be required for flushing purposes than was previously estimated.

#### THE NORTH LAKE

at "McGowan's Pass" has not been defined as to its limits, depth, &c. About 9,000 cubic yards of material, mostly earth, has been excavated from the contemplated site of the lake, and removed into filling for the low ground of "East meadow," during the past season.

Attention has been given to gauging the natural supply of water, and the indications are, that this supply, together with waste, &c., from the large sewer leading from the new reservoir, to the site of the lake, will be ample for all purposes. Until the plan of the lake is settled, however, no very accurate estimate can be made.

#### SUPPLY AND DISTRIBUTION OF WATER FOR IRRIGATION, ORNAMENTAL PURPOSES, &c.

A general plan and estimate has been made for the distribution of water for these objects for the portion of the Park lying south of eighty-sixth street. A contract has been entered into for supplying and laying down the necessary water-pipes, and a large portion of the work has been performed, together with the setting of hydrants and stop-cocks connected with the same.

As far as the work has progressed the system of water distribution is limited to the central lake for flushing purposes, and to the general supply, for irrigation, for fountains, drinking-places, and for watering the roads, for the district of the Park between transverse road No. 1 and the old reservoir. The present contract extends from Fifty-ninth street to the old reservoir, and is expected to be completed as early next season as the state of the ground will permit.

The largest mains that have been laid, extending from the vicinity of the old reservoir southwardly, are ten inches in interior diameter.

The smallest pipes laid for branches, &c., are four inches in diameter. The whole amount of all kinds laid is 21,704 lineal feet. Forty-six hydrants and twenty-one stop-cocks have been set in connection with the pipes laid.

The pipes are of wrought iron and cement.

For flushing the lake eighteen hydrants have been set at the most favorable points on the shores for ejecting the water, by means of hose, over the broader areas of the ice. One three-way hydrant has been placed in the centre of the largest area of the lake, where it is accessible at the winter level, being submerged when the water is raised to the summer level.

By means of these hydrants, the whole surface of the ice can be rapidly flushed with great facility. A new coat of ice can be formed every night when necessary, (if the weather is sufficiently cold,) to perfect the skating for the following day.

Water can also be thrown on, to dissolve snow, or can be admitted beneath the ice to meet any loss or waste, or to raise the level.

No opportunity has been had thus far during the present winter to bring the hydrants into use for these purposes, as the supply (from the Croton) has not been available in consequence of the continued depression of the water in the reservoir. The ice, however, has been kept in good condition without much necessity for flushing, to this date.

A temporary connection of the water-pipes with the old reservoir, by means of a syphon over the reservoir wall, is the only means at present for obtaining water. The arrangement is very imperfect and uncertain, and measures should be taken to supersede it before another winter by a more reliable method.

The capacity of the water-pipes is adapted to additional service beyond what has been estimated would be required, in order to allow a liberal margin for contingencies.

An estimate of the total quantity of the water to be used for the Park, was made at the request of the Comptroller of the Park, in December last, as follows:

“In answer to your request, &c., &c., I submit the following



“ estimate of the quantity of water required for the Central  
 “ Park from Fifty-ninth to Eighty-sixth street, which embraces  
 “ a little over one-half of the entire area of the Park. This is  
 “ as far as I have received the views and instructions of the  
 “ Architect-in-Chief on the subject.

“ 1st.—For watering-places, fountains,  
 and other ornamental purposes.. 175,000 galls. per day.

“ 2d.—For irrigation, watering drives,  
 walks, &c..... 508,000 “ “

“ Total per day during about 7 mos. of  
 the year (summer)..... 683,000 “ “

“ 3d.—In addition to this I have estim-  
 ated (Report to the Architect-in-  
 Chief, Feby. 18th, 1859,) for the  
 central lake during 70 days of  
 winter, for flushing, cleaning, and  
 perfecting the ice for skating.... 270,000 “ “

“ This item, owing to the uncertainties attending it, was  
 “ purposely estimated large. I am satisfied, now that we have  
 “ got the arrangements perfected by hydrants, &c., for flushing  
 “ the ice, that this is more than will generally be required for  
 “ the central lake during the winter, and will be sufficient for  
 “ *both the central and the southern lake* near Fifty-ninth  
 “ street. The above estimate may therefore be considered to  
 “ cover the entire expenditure of water below Eighty-sixth  
 “ street.

“ The greatest rate per day would be 683,000 gallons, and  
 “ this for the season would give, say May to November, inclu-  
 “ sive :

“ 1st.—For watering-places, &c., 175,000 gallons  
 “ per day for 7 months..... 36,750,000

“ 2d.—For irrigation, &c., 508,000 gallons per  
 “ day for 5 months ..... 76,200,000

---

“ Total gallons .....112,950,000

|  |             |
|--|-------------|
| “ 3d.—For the central and southern lakes,  |             |
| “ 270,000 gallons per day for 70 days, say |             |
| “ Dec. to Feb., inclusive.....             | 2,520,000   |
| <hr/>                                      |             |
| “ Total per ann. gallons.....              | 115,470,000 |

“ The first item I presume is not excessive. A much larger quantity of water could undoubtedly be used for ornamental purposes, to great advantage.

“ The second item is based on data from the Bois de Boulogne, and is probably large. As a whole, the quantity of water estimated is certainly not larger than that part of the Park ought to have per annum.

“ Applying this amount proportionally to the area of the Park north of Eighty-sixth street would give (a merely conjectural estimate for the present,) for the whole Park per annum, about 200,000,000 gallons.

“ The question as to how much less water, or the minimum quantity that may be made to subserve the objects of the Park, and also as to the most available means of obtaining it, remains for further consideration. The amount drawn from the Croton can be economized, if necessary, by raising it again from the lakes by steam-engines to a suitable reservoir, and re-distributing it, and the water discharged from the lakes may also be used for manufacturing and other purposes in the less elevated portions of the city.”

It is desirable, before any more work is done, that the plans should be determined of such city sewers as are unavoidably connected with the Park, or that are likely to become necessary hereafter, in order that the general plans of the Park, and especially those pertaining to drainage and hydraulic purposes, may be adapted to them.

*Aggregate quantities of the principal items of work done.*

An approximate estimate of all *earth-work* done on the Park up to 1st January, 1860, including earth excavated, and carted or moved by wheelbarrows, and earth excavated, not

|   |           |              |   |
|---|-----------|--------------|---|
| requiring transportation, as in trenching, light grading, leveling, &c., shows a total amount of . . . 1,144,800 cubic yards. |           |              |   |
| The same in reference to rock, including boulders blasted, &c., shows a total   |           |              |   |
| amount of.....  | 198,000   | "            | " |
| Total earth or rock-filling by contract...  | 68,950    | "            | " |
| Total masonry of all kinds.....   | 36,350    | "            | " |
| Length of brick sewers.....   | 11,337    | lineal feet. |   |
| Stone broken for roads and concrete....   | 31,100    | cubic yards. |   |
| Sand furnished for masonry.....   | 9,730     | "            | " |
| Total quantity of gun-powder purchased.   | 132½      | tons.        |   |
| Total amount of gravel furnished for roads and walks.....   | 14,150    | cubic yards. |   |
| Total amount of bricks purchased in 1859.....   | 1,657,250 |              |   |
| Total amount of cement purchased in 1859.....   | 13,760    | barrels.     |   |

#### THE ENGINEER CORPS.

One principal assistant and seven assistant engineers are employed at this date.

To each assistant is assigned one rodman, and from one to three axemen, as occasion requires. A plane table surveyor is also employed, who has two to three axemen.

Six of the assistants are attached to the general engineering force, and one is attached to the department of agricultural drainage. Besides these, three draughtsmen are employed in the office, and one clerk, whose duties are mainly keeping the accounts of the transverse road work.

The axemen, and some who act as rodmen, when not required with the assistant engineers, are temporarily transferred to the general force.

#### THE PARK FORCE.

As nearly as can now be ascertained, about 10,500 men have had employment at different times on the Park since its commencement. 5,435 have been employed during the last year.

|   |       |
|---|-------|
| The largest number employed in the construction department at one time during the year was..... | 3,666 |
| Of this number, about 50 were employed by contractors.  |       |
| The average number per day for the whole year is.....   | 3,027 |
| The average number of general foremen for the year....  | 11    |
| “ “ foremen.....  | 75    |
| “ “ assistant foremen .....   | 60    |
| “ “ messengers .....  | 7     |
| “ “ waterboys .....   | 72    |
| “ “ working days per month.....   | 19    |
| “ total “ for the year.....   | 228   |

## DISCIPLINE.

*Number of men discharged during the year for inefficiency.*

|                         |     |
|-------------------------|-----|
| Foremen .....           | 3   |
| Assistant foremen ..... | 6   |
| Laborers.....           | 275 |

*Discharged for violation of orders, neglect of rules, &c.*

|                        |     |
|------------------------|-----|
| Foremen.....           | 7   |
| Assistant foremen..... | 12  |
| Laborers.....          | 267 |

*Temporary suspensions from duty for neglect of rules, &c.*

|                        |      |
|------------------------|------|
| General Foremen.....   | 1,   |
| Foremen .....          | 12,  |
| Assistant Foremen..... | 8,   |
| Laborers.....          | 466. |

## PROMOTIONS.

|                                       |     |
|---------------------------------------|-----|
| Foremen promoted to General Foremen.. | 1.  |
| Assistant Foremen to Foremen.....     | 20. |
| Laborers to Assistant Foremen.....    | 10. |



## ACCIDENTS.

August 11th. A premature blast in the tunnel, near the reservoir, caused by using iron tampers, contrary to orders, injured three laborers—all recovered. Two lost each an eye; the other lost the small finger of the right hand.

September 26th. A laborer, while sitting outside the signal flag, with his back towards a blast, was struck on the head by a stone and killed.\* This is the second fatal accident that has occurred on the work, the previous one being in 1858.

A few other slight accidents have happened, in most cases the result of imprudence. It may be added, not as a casualty connected with the work of the Park, that a laborer was killed by lightning during a sudden shower in August last; he took refuge under a tree at the lower end of the Park, and was standing when struck, with a crowbar in his hand.

The small number of serious accidents that have occurred, in proportion to the number of persons employed, is evidence of the importance of the stringent regulations, especially as to the blasting, that have been adopted as safe-guards to the employees.

The good order that has at all times prevailed among so large a body of men is also a subject worthy of remark. Although the rules of the Park have had to be enforced, and, as the preceding statement shows, a considerable number, mostly new men, and before they became aware of the strict application of the rules, have been the subject of discipline, the proportion is much below the average on public works, of those who were really disorderly or insubordinate. Considering that the force is made up of more than the usual diversity of native and adopted citizens, and grouped together more densely than on public works of a different description, the general good order and good feeling that has been main-

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\* In this case, a lack of judgment, rather than a clear breach of the rules, was shown by the foreman and assistant foreman in charge, in placing the flagman. The effect of the blast was unusual, being in a narrow trench; and the man killed was imprudent in not being on the look-out when the word was given. The foreman and assistant were removed.

tained is highly creditable to the employees, and promises well for the future operations on the Park.

I take occasion to add, that Mr. M. A. Kellogg, my assistant in this department, who has had the special daily supervision of the force, has discharged that duty faithfully, and with his habitual energy and practical ability.

I am,

Very respectfully,

Your obedient servant,

WM. H. GRANT,

Superintending Engineer.

CENTRAL PARK,  
January 24th, 1860.



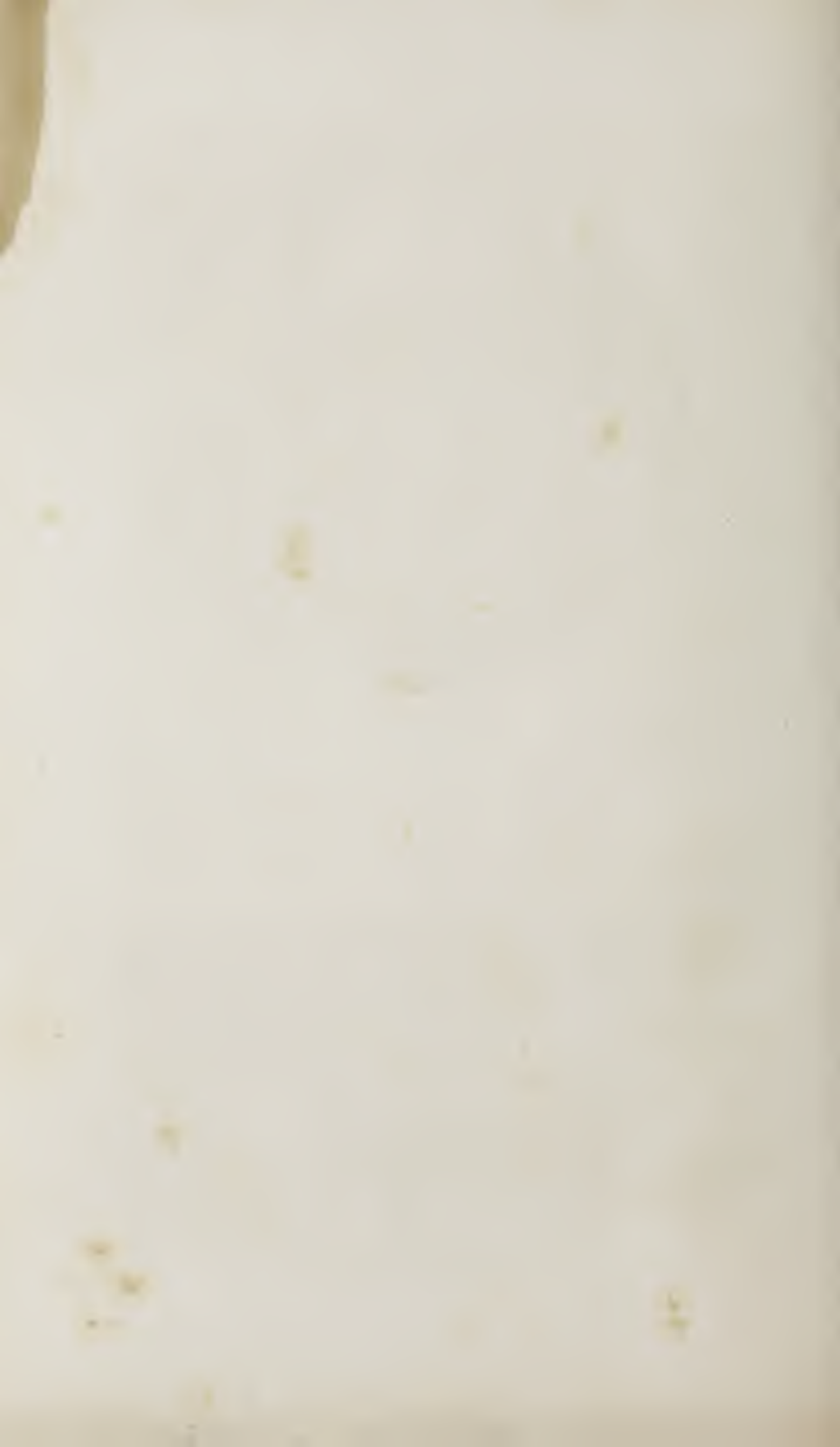


ROUGH STONE ARCHWAY  
IN THE RAMBLE



RUSTIC BRIDGE, IN THE RAMBLE.





# STATEMENT RESPECTING THE DRAINAGE OF THE CENTRAL PARK.

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CENTRAL PARK,

January 23d, 1860.

FRED. LAW OLMSTED, Esq.,

Architect-in-Chief:

Sir,—During the year 1859, the following agricultural drainage work has been done in the Central Park:

1,290 ft. of brick sewer, 18 inches in diameter, have been laid through the east meadow.

2,343 ft. of vitrified pipe have been laid in the lower Park, (below Eighty-sixth street,) and

2,086 ft. of the same, in the upper Park, (above Ninety-third street.)

This sort of pipe has been used only for outlets and main drains.

31,508 ft. of common red drain tile have been laid below Eighty-sixth street, and

14,435 ft., above Ninety-third street.

2,454 ft. of stone and tile drain have been laid below Seventy-ninth street, and

322 ft. above Ninety-third street.

In cases where it is necessary to collect water about the base of rocks, or over rock which lies at irregular depths below the surface, it has been found best to dig a trench to the rock, without regard to the inequalities, and to grade with small stone to a line of uniform descent, placing a tile drain on that line, immediately on the stone. The tile is then covered with

sods, and the trench filled to the surface of the ground. The water rises through the stone, and enters the tile, which secures a channel for it to pass away, and thus prevents its rising higher.

Six brick silt-basins coming to the surface, and about forty other smaller basins (of brick or vitrified stone-ware) under ground, have been made ; while nearly every junction of  $1\frac{1}{4}$  or 2 in. tile drains has been supplied with a small basin, formed of a 6 in. tile set on end.

There have also been made eleven stone basins for the collection of the water of underground springs.

The total amount of drains laid during the year 1859, was as follows :

|                              |                                 |                                    |
|------------------------------|---------------------------------|------------------------------------|
| Below Eighty-sixth street... | $7\frac{0.7.0}{1.0.0.0}$ miles. | } $10\frac{5.0.4}{1.0.0.0}$ miles. |
| Above Ninety-third street... | $3\frac{4.3.4}{1.0.0.0}$ "      |                                    |

In the lower Park, drains have been laid on those tracts which were numbered 2, 5, and 7 on the map accompanying my report of last year, and on portions of tracts 6 and 11, while those numbered 1, 3, 4, 8, 9, 10, 12, and 13, are still ungraded, and, for this and other reasons, were not made ready for draining during the past season.

In the upper Park, a main drain (10 in. vitrified pipe, and 18 in. brick sewer) has been laid from Eighth avenue to, and through the east meadow. The west meadow, and more than one-half of the east meadow, have been thorough-drained.

The manner of performing the work has not been changed from that first adopted, except in the following particulars :

1. The advantage of round tile, with collars over the "sole tile," (having an egg-shaped orifice,) was so clearly demonstrated by the use of the  $1\frac{1}{4}$  inch tile, with collars, in 1858, that I have, with some difficulty, procured to be made, round tiles,  $2\frac{1}{4}$  in. in diameter, (the size of the collars for  $1\frac{1}{4}$  inch tile,) and  $3\frac{1}{2}$  inch round tile, shorter sections of the same serving as collars for the  $2\frac{1}{4}$  inch tile.

Since these improvements in the manufacture have been made, this form of tile has been used wherever practicable.

The  $3\frac{1}{2}$  inch round tile have an equal capacity with the 4 inch sole tile, and are sold at the same price. They are, however, much more economical for use, as they can be laid on any side, and thus made to fit perfectly at the joints, while the larger sizes of sole tile are invariably shortest at the top, from the more rapid drying of that portion, and require to be dressed by hand, to make a sufficiently close joint.

2. The grade of the lateral drains is, wherever practicable so arranged, that they discharge into the top of the tile of the main, that the flow of water in them may not be retarded while the main is running nearly full.

The action of the drains hitherto laid has been satisfactory, in all cases where the surface of the ground has not been compacted by carting or other work. In two or three instances, where the water from an extended surface collects in a small space of turf ground, during heavy showers, it will probably be best to secure an immediate removal, by laying shallow drains at short distances apart. These drains would not lessen the value of those which are already laid at greater depths, and which, in ordinary weather, will carry all of the water.

It has been found impossible entirely to prevent, in all cases, the entrance of silt into drains, the joints of which are so imperfect as they necessarily are with the material now used. When no silt-basins are used, the dirt is deposited along a considerable length of the drain, and may obstruct it at any point where, from roughness, or from some other imperfection of the tile, or from an alteration in the grade, and consequently in the velocity of the current, it is most readily deposited.

At points where the silt would most naturally accumulate, (as where the grade of the drain is changed, or at the intersections of laterals with main drains on the same grade,) I have placed silt-basins; and their value has been fully demonstrated by the fact that in certain cases, where obstructions have been suspected, they have been found at the small silt-basins. These have been readily examined, and the accumulation of silt has been easily removed; while, had the drain not been so pro-



vided, the accumulation would have been much more difficult of discovery and removal. The larger silt-basins, which are open to the surface, collect a considerable amount of silt during the first six months of the action of the drains, and very little after that time. They thus afford facilities for the removal of a quantity of matter, which, if allowed to pass on through the outlet drains, would endanger their action.

As an evidence of the value of even small silt-basins, I would instance the fact that, in the basin in which the observation of the discharge of water has been taken, all of the silt discharged is collected in the bucket used for guaging, and which, when not in use, stands under the mouth of the drain; not until this bucket is full of silt will any be found in the basin itself.

In order to test the efficiency of the system of drainage employed on the Park, I have caused daily observations to be taken of the amount of water discharged from the principal drain of "the Green," and have compared it with the amount of rain-fall. A portion of the record of those observations is herewith presented.

In the column headed "Rain-Fall", the amount of water falling on one acre during the entire storm, is given in gallons. This is computed from the record of a rain-guage kept on the Park.

Under the head of "Discharge," the number of gallons of water drained from one acre during twenty-four hours is given, This is computed from observations taken, once a day or oftener, and supposes the discharge during the entire day to be the same as at the time of taking the observations. It is, consequently, but approximately correct.

| Date.    | Hour.                | Rain-fall.    | Discharge. | Remarks.  |
|----------|----------------------|---------------|------------|---|
| July 13. | 10 A.M.              | 49,916 galls. | 184 galls. | Ground dry. No rain since 3d inst.<br>2 inches rain fell between 5.15 and 5.45 P. M., and 1-5th of an inch between 5.45 and 7.15.   |
| " 14.    | 6 $\frac{1}{2}$ "    |               | 4,968 "    |   |
| " 15.    | 6 $\frac{1}{2}$ "    |               | 1,325 "    |   |
| " 16.    | 8 "                  |               | 1,104 "    |   |
| " 16.    | 6 P.M.               | 33,398 "      | 7,764 "    | { Ground saturated at a depth of 2 feet<br>when this rain commenced.  |
| " 17.    |                      |               | 4,319 "    |   |
| " 18.    | 9 A.M.               |               | 2,208 "    |   |
| " 19.    | 7 "                  |               | 1,325 "    |   |
| " 20.    | 6 $\frac{1}{2}$ "    |               | 993 "      | This slight rain only affected the ratio<br>of decrease.<br>Nothing worthy of note until Aug. 3d.<br>Rain from 3 P.M. to 3.30 P.M.<br>" 4.45 P.M. to 12 M.N.<br>" 12 M. to 6 P.M.   |
| " 21.    | 11 "                 |               | 662 "      |   |
| " 22.    | 6 $\frac{1}{2}$ "    |               | 560 "      |   |
| " 23.    | 10 "                 | 1,698 "       | 515 "      |   |
| " 24.    | 7 "                  |               | 442 "      |   |
| Aug. 3.  | 6 $\frac{1}{2}$ "    | 8,490 "       | 191 "      |   |
| " 4.     | 6 $\frac{1}{2}$ "    | 13,018 "      | 184 "      |   |
| " 5.     | 6 $\frac{1}{2}$ "    | 45,288 "      | 368 "      | Rain f'm 12 A.M. Aug. 12 to 7 A.M. Aug. 13.<br><br>" 3 A.M. to 4.15 A.M.<br>" 3.30 P.M. 24th, to 7 A.M. 25th.<br>" 7 A.M. to 12 M.<br><br>" 4 P.M. to 6 P.M.<br><br>" 12 M.N. (10th) to 7 A.M. (11th.)<br>" 12 M. (11th) to 7 A.M. (12th.)<br>" 4 P.M. to 6 P.M.<br>" 12 M. to 12 M.N.<br><br>Rain continued until 12 M.<br><br>Rain from 12 M. (19th) to 7 A.M. (20th.)<br>" 3.20 P.M. (20th) to 6 A.M. (21st.)<br>" 12 M. (21st) to 7 A.M. (22d.)<br>Rain continued until 7 A.M. (23d.) |
| " 6.     | 6 P.M.               |               | 8,280 "    |   |
| " 6.     | 9 A.M.               |               | 3,954 "    |   |
| " 7.     | 9 "                  |               | 2,208 "    |   |
| " 8.     | 6 $\frac{1}{2}$ "    |               | 828 "      |   |
| " 9.     | 6 $\frac{1}{2}$ "    |               | 662 "      |   |
| " 12.    | 6 $\frac{1}{2}$ "    |               | 368 "      |   |
| " 13.    | 7 "                  | 19,244 "      | 1,104 "    |   |
| " 14.    | 9 "                  |               | 736 "      |   |
| " 24.    | 9 "                  | 1,132 "       | 191 "      |   |
| " 25.    | 9 "                  | 5,547 "       | 9,936 "    |   |
| " "      | 7 P.M.               | 566 "         | 7,740 "    |   |
| " 26.    | 6 $\frac{1}{2}$ A.M. |               | 3,974 "    |   |
| " "      | 6 P.M.               |               | 2,208 "    |   |
| " 27.    | 6 $\frac{1}{2}$ A.M. | 566 "         | 1,529 "    |   |
| " 28.    | 7 "                  |               | 993 "      |   |
| Sep. 11. | 7 "                  | 566 "         | 165 "      | There was not enough rain during this<br>period to materially affect the flow of<br>water.  |
| " 12.    | 9 "                  | 5,094 "       | 147 "      |   |
| " 13.    | 9 "                  | 566 "         | 132 "      |   |
| " 16.    | 9 "                  | 15,848 "      | 110 "      |   |
| " 17.    | 7 "                  | 27,552 "      | 1,104 "    |   |
| " "      | 5 P.M.               |               | 6,624 "    |   |
| " 18.    | 8 A.M.               | 566 "         | 4,968 "    |   |
| " 19.    | 6 $\frac{1}{2}$ "    |               | 2,208 "    |   |
| " "      | 4 P.M.               |               | 1,805 "    |   |
| " 20.    | 9 A.M.               | 566 "         | 1,324 "    |   |
| " 21.    | 9 "                  | 5,094 "       | 945 "      |   |
| " 22.    | 9 "                  | 10,185 "      | 1,656 "    |   |
| " 23.    | 9 "                  | 40,756 "      | 7,948 "    |   |
| " 24.    | 9 "                  |               | 4,968 "    |   |
| " 25.    | 9 "                  | 566 "         | 2,984 "    |   |
| " 26.    | 9 "                  |               | 2,484 "    |   |
| Oct. 1.  | 9 "                  |               | 828 "      |   |
| Nov. 18. | 9 "                  |               | 83 "       |   |

| Date.    | Hour,  | Rain-fall.   | Discharge. | Remarks.                                     |
|----------|--------|--------------|------------|--|
| Nov. 19. | 9 A.M. | 1,132 galls. | 184 galls. | Rain from 4.50 P.M. (18th) to 8 A.M. (19th.) |
| " 20.    | 9 "    |              | 119 "      |  |
| " 22.    | 9 "    | 29,336 "     | 6,624 "    | Rain all of the previous night.              |
| " "      | 2 P.M. |              | 6,624 "    |  |
| " 23.    | 9 A.M. |              | 4,968 "    |  |
| " 24.    | 9 "    |              | 1,711 "    |  |
| " "      | 2 P.M. |              | 1,417 "    |  |
| Dec. 17. | 9 A.M. |              | 552 "      | Rain during the previous night.              |
| " 18.    | 9 "    |              | 4,968 "    |  |
| " 30.    | 10 "   |              | 581 "      |  |

The tract drained by this system, though very swampy, before being drained, is now dry enough to walk upon, almost, immediately after a storm, except when underlaid by a stratum of frozen ground.

Respectfully,  
 GEORGE E. WARING, JR.,  
 Draining Engineer.

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